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Group Induced Shift, Extremity of Judgment
and Perceived Influence in a Judicial Context:
Relationship to Age, Sex, Education Level,
Rigidity and Dogmatism

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A JUDICIAL CONTEXT: RELATIONSHIP TO AGE, SEX, EDUCATION LEVEL, RIGIDITY
AND DOGMATISM

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PREFACE

Before any systematic research was done on the question of whether decisions made by individuals differed in any lawful sense from those made by a group, a wide range of societies developed systems which assigned a number of decisions to groups rather than to individuals. Terms such as, "council of war", "jury", "general staff", "board of directors", "committee", "negotiating team" and many others attest to the fact that under some conditions groups were regarded as, in some way, more effective. Group decision was felt to be "more effective" because of the group in question being "better informed" or being "more representative" of the larger populations that were affected by a decision than a single decision-maker would be.

Whether group decisions are "more effective" in an objective sense or not, it is commonly believed that group decision-making displays certain traits. As Clark (1971, p. 251) suggests, "It is often assumed that group arrangements for solving problems and making decisions suppress or dampen individual tendencies toward boldness, innovation and daring", i.e., that they are more conservative. This popularly held opinion was supported, up until the early sixties, by research in the field of social psychology (Allport, 1924; Farnsworth and Behner, 1931; Festinger, 1954). However, both popular opinion and previous research were contradicted finally by the findings of Stoner (1961), who concluded that group decisions are riskier than those made by individuals. The difference between the individual's decision when made alone, and the decision he or she makes, in a group, is referred to as "shift". The term "shift" may also refer to the difference between the individual's decision prior to group discussion and his individual decision after group discussion.

Over the last decade and a half, a vast literature in this area has evolved. Reviewers have tended to draw conclusions favouring one or another of the many schools of thought concerning explanations of the phenomena involved (Cartwright, 1971; Clark, 1971; Pruitt, 1971;

Vinokur, 1971). Much of the research to date can be viewed in terms of the conflict between the various schools of thought, each school attempting to show that it accounts for the greater part, if not all, of the effect shown. Little work, on the other hand, has been done in deliniating just where one school can be said to be most applicable, and where another takes over as the best predictor. It is worth noting that Pruitt (1971) warns against the too hasty assumption of the practical implications of such work. He claims that "the dangers of hasty overgeneralization of laboratory findings have never been so apparent" (p. 340).

In the present study, two laboratory type situations are involved. The attempt has been made here, however, to construct situations having some similarity with practical situation in the court, where a group of jurors or judges - more specifically those in a Swedish court - reaches a decision regarding the guilt or innocence of a defendant. This attempt, to be sure, must be considered as far from perfect.

Parenthetically it should be noted that in Swedish courts the judge - acting either alone, together with a group of lay judges, or as a member of a panel of judges - is called upon to evaluate the evidence so as to reach a verdict (decision) of guilty or innocent and is also to decide upon punishment in the case of a "guilty" verdict. It is behavior in connection with decisions of the former type which is of concern here.

In order to focus attention on a manageable number of life-type situations, and in keeping with the intention of gaining some understanding of the practical implications of the phenomena investigated, a limited range of circumstances likely to arise in judicial decision-making was examined.

The present study, in this respect exploratory, aims to compare individual decision-making with that of groups as this is carried out in a judicial type context. A number of theories commonly regarded as contradicting one another will be reviewed. However, it



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may be more fruitful to regard them not as essentially conflicting but rather as applicable, to a greater or lesser extent, within different contexts in which decisions are made. The study does not attempt to displace one theory by another for all contexts, but rather to identify which theories are particularly relevant within a specific context. In addition, it considers the effect of a number of demographic variables (age, sex and education level) and personality variables (rigidity and dogmatism) - as well as the effect of the individual's assessed influence in the group - upon the decision making behavior investigated.

PROBLEM AREAS CONSIDERED

Judgmental and Choice Shift

As regards the now considerable literature on whether, how, and under what conditions an individual makes different decisions as a result of having been a member of a group rather than deciding as an individual, Stoner (1961) began much of the controversy by demonstrating a risky shift such that decisions with group consensus tended to be riskier than the mean of the preferences of the individuals which make up the group. This finding has been replicated by many authors (Marquis, 1962; Wallach and Kogan, 1965; Bem, Wallach and Kogan, 1965; Blank, 1968; Kogan and Wallach, 1967; Pruitt and Teger, 1969; Stoner, 1968; Teger and Pruitt, 1967; Wallach, Kogan and Bem, 1962, 1964). The results may partly have had such impact since they are the opposite to what would have been commonly supposed, namely that committees are more conservative than individuals, which would be a conservative effect. Stoner's 1961 results appear also to have had more impact than those of Lonergan and McClinock the same year (1961), who found that individual and group decisions were not significantly different. Work during the decade that followed suggested that there was truth in both points of view, that which supported a risky shift and that supporting a conservative effect - depending on the total situation.

Among the various theoretical approaches to group decision making to be considered are the diffusion of responsibility theory (Wallach, Kogan and Bem, 1964), the leadership theory (Marquis, 1962;

Hoyt and Stoner, 1968), the familiarization theory (Bateson, 1966), the risk-as-value theory (Brown, 1965), the release theory (Pruitt, 1969) and the relevant argument theory (Nordhoy, 1962; Vinokur, 1971).

A considerable number of studies of group decision-making have dealt with the Choice Dilemmas Questionnaire (CDQ). This questionnaire, originally developed by Wallach and Kogan (1959), consists of twelve life-situation dilemmas confronting hypothetical individuals. The hypothetical individual must choose between a situation that is less attractive but safe, and one that is more attractive but in which he or she is less likely to succeed. The subject recommends a particular course of action by stating the minimum odds of success he or she would require, on a scale of odds varying from 1 out of 10 through 10 out of 10, before agreeing to a particular course of action.

The effort put into this area of research has been largely motivated by the implications it has for real-life situations in which vital decisions are made by groups of individuals, rather than by its purely theoretical implications. As an extreme example, Kogan and Wallach(1967) point out that the decision of whether or not to engage in nuclear war may well be made by a group of individuals and that the evidence suggests that such a decision tends to be a riskier one than if an individual made it. With the idea of testing laboratory findings under natural conditions, Siegel and Zajonc (1967) studied decision-making in small groups, each consisting of a psychiatrist, a psychologist and a social worker performing in their professional framework. Their results indicated a risky shift effect. However, Madaras and Bem (1968) ran a study which indicated that groups become more cautious in real life when (a) caution is a norm and/or (b) the results affect other people, and/or (c) when the questions under consideration concern morality.

As results tend to vary from experiment to experiment, unless there is exact duplication, and as the implications are intended to be generalized, efforts have been made to discover the underlying factors at work so as to predict when the shift effect is to be

expected in real life. An early approach was that of Wallach, Kogan and Bem (1964), who attempted to account for the effect with the diffusion of responsibility theory. This theory argues that in a group individuals accept a riskier alternative than they would individually because the responsibility for possible negative consequences of the decision is shifted from one's own shoulders to those of all the members of the group.

Wallach and Kogan (1965) endeavored to pinpoint an underlying factor which might partly explain the behavior which their theory postulated. They concluded that an affective bond which develops between the members of a discussion group contributes to the diffusion of responsibility. As concerns this line of reasoning, a number of experimenters have argued for opposing theories and obtained results which support them. Alker and Kogan (1968) claimed to demonstrate that discussion is not enough to cause risky shift after the group experience - the discussion having to be about the risk taking situation in order to be effective. This would seem to exclude the affective bond theory. Lamm (1967) developed an information processing explanation which suggested that the information communicated and not the affective bond was important. He claimed to also observe the risky shift effect when the discussion group was listened to and watched (via a one-way window) by members not involved in the discussion. However, Kogan and Wallach (1967) and also Rettig and Turoff (1967) ran experiments that contradicted those of Lamm (1967). Results which Blank (1968) reported fell somewhere in between; he found a risky shift to occur when instead of discussion taking place, betting on the outcome was conducted in each other's presence. However, the effect obtained did not endure afterwards. It should be noted that in this case the experimental paradigm of a pure betting task, involving a "group" whose members were not free to communicate with one another, was neither life-like nor similar to the experimental paradigm used by the other researchers.

Using the CDQ, Clark and Willem's (1969) substituted the phrase "Please check the probability that you would consider acceptable" for the commonly used instruction. "Please check the lowest

probability that you would consider acceptable", and obtained no significant risky shift. However, as this experiments has not been successfully replicated, the findings must be considered as possibly based on experimental error.

Peterson and Fulcher (1971) warn similarly, against generalizing findings based on the CDQ. In a study they conducted with students of Management and Business Studies, using a marketing case instead of the CDQ, they discovered no risky shift effect.

Another kind of approach to the same set of problems is that of Brown (1965), who developed the risk-as-value theory, (sometimes called risk-as-value-social-comparison-theory, Pruitt, 1971). This theory assumes for a broad class of situations that (a) people tend to associate a high value with the taking of risky decisions, (b) each person tends to think himself riskier than most other people in the population and (c) individuals themselves try to choose a level of risk above the group average. According to these assumptions, if an individual finds that the group average is higher than he assumed (i.e., that he is not riskier than the average), he adjusts his position towards greater risk. This would account for the risky shift. Wallach and Kogan (1965), on the other hand, attacked Brown's theory on the grounds of finding that a risky shift was not obtained by having private decisions disclosed. However, although this argument is strong if one takes Brown's theory in toto, it is less powerful if one amends the theory so as to stipulate that group members know one another. Also, support was obtained for Brown through Wallach and Wing's (1968) finding that subjects in general tend to think of themselves as riskier than the average of the population, a result reported by Willems (1969) as well.

Brown's theory predicts, in the form stated above, that groups will make riskier decisions than individuals. However, there have been findings that this is not always the case. Stoner (1968) concluded that Ss are more risky when risk is the norm, and less risky when caution is the norm. He quotes the findings of Nordhoy (1962), who

1. The first paragraph of the letter is as follows:

reported a cautious shift on the marriage item of the Choice Dilemma Questionnaire. A study by Levinger and Schneider (1969) provided more systematic support for Stoner's thesis. Stoner's revised and more general version of Brown's theory will be referred to here (cf. Stoner, 1968; Pruitt, 1971) as the multiple value theory. This theory assumes (a-) that persons tend to associate a high value either with a risky or with a cautious decision, depending upon the situation, (b-) that each person tends to think of himself as more risky or more cautious than other persons, whichever of these is appropriate, and (c-) that persons therefore endeavour to choose a level of risk or of cautiousness, as the case may be, above the group mean.

Release theory, (Pruitt, 1969, 1971), which is regarded as a form of the leadership theory (Marquis, 1962), hypothesizes that a risky shift (or a conservative shift) occurs in group discussion because of the group's discovery of a single group member who endorses high risk taking (or any other value), which releases the more cautious group members from the assumed social constraints that are holding them back from risk taking (Pruitt 1969, 1971). Pruitt claims support for this theory from a wide range of experiments which may not have been directly concerned with the risky shift phenomenon (e.g., Asch, 1952; Wheeler and Caggiula, 1966), as well as some which were concerned with it (Vidmar, 1970; Wallach and Mabli, 1970; Doise, 1969).

Can one be absolutely certain that the risk shift phenomenon exists? Despite all the replications obtained of the effect which Stoner (1961) discovered, the circumstances under which the effect finds expression may be more limited than at first appeared. One can quote other researchers who investigated the phenomenon in the early 60's and did not find significant differences between individuals and groups (Cartwright, 1971, lists: Atthowe, 1961; Lonergan and McClintock, 1961). Some research since the early 60's has also been done on circumstances in which one would expect no shift or much reduced shift (Rabow, Fowler, Bradford, Hofeller and Shibuya, 1966; Madaras and Bem, 1968).

Given that the shift phenomenon exists within a particular range of circumstances, can it be attributed to a non-group, or

"Pseudo-Group" effect? Such a point of view, the familiarization theory, was put forward first by Bateson (1966), his experiment being successfully replicated by Flanders and Thistlewhite (1967). Familiarization theory suggests that what happens in group discussion is simply that members of the group become more familiar with the material, this causing them to become more confident and more willing to take risks. Those authors' theory has been almost totally rejected by most researchers, since attempts to replicate the earlier findings have failed (Bell and Jamieson, 1970; St. Jean, 1970). However, it may be supported indirectly by the finding that, as more evidence is presented, confidence continues to grow (see Tversky and Kahneman, 1974; Einhorn and Hogarth, 1978).

It has also been suggested that the shift effect is due to the experimental paradigms employed rather than to group decision-making characteristics. One such argument is that it is the form of the instructional set that is responsible for the effect, i.e., the manner in which the subject is asked to make his decisions when responding to the Choice Dilemma Questionnaire. This criticism, put forward by Clark and Willems (1969), may be particularly salient since a considerable portion of the studies concerning group decision-making have used the CDQ.

It is possible that, though the shift phenomenon has been shown to exist, it is too weak an effect to be worth exploring. Researchers who in the early 60's concentrated on explaining the risky shift phenomenon noted later that some items (numbers 5 and 12) on the CDQ displayed only a very "weak" risky shift (Brown, 1965; Pruitt and Teger, 1967). This had the statistical effect of weakening the shift with regard to the set of items as a whole. Later, after Brown's risk-as-value-theory (Brown, 1965) had undergone further development, it became accepted that there could be a "conservative shift". This meant that the items of the CDQ that had previously been viewed as displaying a very weak risky shift, could now be seen as leading to a conservative shift. Further items of the CDQ-type were developed that had this property of resulting in group decisions

being more conservative than individual decisions (Fraser, Gouge, and Billig, 1970; Nordhy, 1962; Rabow, Fowler, Bradford, Hofeller, and Shibuya, 1966; Stoner, 1968).

A parallel development occurred when a large number of "exceptions" were discovered that had no strong shifts towards either the risky or conservative ends of the riskiness dimension. Just as the "weak" items had led to the discovery of the conservative shift, these neutral items were central to the development of a theory by Stoner (1968) which Pruitt (1971) denotes as the multiple-values-social-comparison-theory. Stoner suggested that item-specific values exist (such as own physical comfort, winning games of a competitive nature, etc.) and that if an item displays no shift on the risk dimension this may be due to the values associated with it not being well-represented at the two ends of the scale.

Another potential difficulty is that even if the shift phenomena is a reasonably strong one, it may be too variable to be effectively predicted. A considerable amount of research has been done on factors which may account for much of the variability that the shift effect displays from one situation to another. It has been shown, for example, that the composition of groups affects the degree of shift, heterogeneous groups (of both high and low risk takers) producing larger risky shift than homogeneous groups (Vidmar, 1970; Clark, 1971).

The kind of decision to be made has also been found to be an important factor. For instance, it has been shown that decisions with serious consequences for the individual are less likely to display a risky shift, and more likely to produce a conservative shift (Johnson and Andrews, 1971). Similarly, decisions effecting others display less risky shift. (Blitz and Dansereau, 1972; Zaleska and Kogan, 1971).

Another factor at work is the means of communication between the members of a group. A shift effect has been detected when

subjects in a group are permitted to only discuss the pros and cons of a risky decision without declaring their own preference (St. Jean, 1970), while other researchers have found the shift to also occur when discussion is not permitted but the group members show their own previous decisions to other members of the group (Teger and Pruitt, 1967). The timing and method of presentation of evidence has been found to likewise be relevant: Tversky and Kahneman (1974) demonstrated that the presentation of additional information after subjects have already reached an initial conclusion rarely causes them to reevaluate this conclusion.

Another observation regarding the group effect has been made by a group of researchers who cannot be classified in terms of the schools mentioned above. Zajonc, Wolosin, Wolosin and Sherman (1968), who demonstrated a conservative shift, suggested there to be a difference between the subjective utility of success and/or failure of individuals in groups and the corresponding subjective utility of the same individuals when alone. For example, an individual may subjectively gain more out of being seen to succeed when others are around than when he is alone.

In connection with the research reviewed here it is worthwhile to consider studies concerning the effect of personality factors of possible relevance. Wallach, Kogan and Burt (1968) investigated whether the risky shift might be explained by riskier member of the group being more persuasive. They concluded that this was not the case. Kogan and Wallach (1967) examined other personality factors as well, finding that more anxious Ss showed greater shift whereas more defensive Ss showed less shift.

Having considered a wide range of laboratory findings, one cannot help but ask to what extent the shift phenomenon occurs outside the laboratory. Contradictory results are available. Siegel and Zajonc (1967) found a risky shift effect among professional workers

in a psychiatric decision-making setting. Students making a decision concerning how to obtain their school grades demonstrated a conservative shift (Cohen and Ruis, 1974), as did other students researched by Clement and Sullivan (1970), whereas Semin and Glendon (1973), in another real-life study involving in this case an industrial job evaluation procedure, found no shift at all.

It could be argued that if results are contradictory, one can decide from the start that we do not possess a useful tool for practical purposes. However, if one considers the full range of factors outlined above, one may suppose that more sophisticated techniques than those used thus far may be developed which will succeed in predicting from the laboratory to real life. An important problem in the present context is to consider what the terms "risky shift" and "conservative (cautious) shift" mean in terms of judicial decision-making as it is investigated here. If a judge, after group discussion, gives a higher estimate of the probability that the defendant is guilty than before, does this represent a risky shift? Similarly, if the judge following group discussion lowers his estimate of the probability that the defendant is guilty, does this represent a conservative shift? Likewise, should a decision to convict the defendant be regarded as, generally speaking, more risky and one of acquittal as more cautious?

An effort to answer these questions must consider the meaning or consequences of the term "risk" for the defendant as well as for the society. The risk for the society may be considered as being increased by any aspects of the judge's decision making which increase the probability of an actually guilty person being acquitted, since this may allow or encourage the person to threaten the society in the future, or may encourage other persons for commit such a crime. From the standpoint of the defendant, on the other hand, any aspects of the judge's decision making which raise the probability that the defendant will be convicted would increase the risk to which he (or she) is exposed, a risk which can

be seen as particularly severe if the defendant in fact is innocent. At the same time, the risk of convicting an innocent person is a risk to society as well, since the defendant himself is a part of society and since false conviction can lead to the court system being perceived as unjust.

Another, partly related manner of considering the concept of risk would be to consider the question of whether, or to what extent, a decision is justified by the available evidence. If one assume a false conviction to be a more serious error than a false acquittal, then one could regard an unjustifiably high estimate by the judge of the probability that the defendant is guilty, or an unjustifiably high confidence in the correctness of the decision to convict the defendant, as risky and the opposite behaviour as cautious. A great difficulty in applying such an approach might be that in the field of the judicial decision-making the judge often has no objective instrument (criteria) for determining actual guilt or innocence. Lacking an objective criteria makes it difficult or impossible to evaluate the decision-making behaviour of the judge as being justified or not in the face of the available evidence and regarding it as risky or cautious in this sense. Also, the justifiability of a decision is partly a function of what decision criterion is seen as appropriate. A possible formulation of this criterion is in terms of a particular probability, or adjudged probability, that the defendant is guilty. Raising the decision criterion would decrease the risk of false conviction, although it would also increase the risk of false acquittal. (For a discussion of the relevance of signal detection theory to such matters, see Goldsmith, 1973, 1977.) These considerations highlight the complexities which are involved in applying the concepts of risky or cautious shift in the context of the judicial decision-making.

Of the various theories applying to the shift phenomenon, two are of particular interest: the multiple value theory and the diffusion of responsibility theory. Research in support of the multiple value theory in the narrower sense generally attempts to demonstrate one of the following contentions:

- a) That the necessary conditions postulated by Stoner (1968; cf. Brown, 1965) did indeed exist when the shift occurred, e.g. that the persons in question tended to each believe himself to best approximate the behaviour which is highly valued (Madaras and Bem, 1968; Levinger and Schneider, 1969; Pruitt and Teger, 1967), and/or
- b) That the shift which occurred could not be attributed to an affective bond of the sort often postulated by the diffusion of responsibility theory (Lamm, 1967), and/or
- c) That a conservative shift occurs, something which is not predicted by the diffusion of responsibility theory but would under appropriate conditions be predicted by the multiple value theory.

It is interesting to note that only rarely has it been demonstrated that all the shift effect could be attributed to the risk-as-value theory. The diffusion of responsibility theory, even under restricted conditions, appears to account for some of the effect. When Ss are informed, for example, of other Ss' responses, and thereafter display shift, this is rarely as great as when the Ss' are permitted face communication (Teger and Pruitt, 1967). These sorts of findings lead one to wonder whether both kinds of theories may be valid and whether each tendency may be the predominant one under appropriate conditions.

An aspect of the risk-as-value theory not much emphasized in the literature is that attempting to approximate a highly valued position could readily give rise to social approval, a form of positive reinforcement, through other individuals observing one's behaviour or getting to know about it and lending their approval. Generally, the individual's behavior here is not dissonant with his self image. In contrast to this, the diffusion of responsibility theory involves support for an individual's doing something of which he fears that society would disapprove, support being in the form of comforting the individual with the knowledge that others would act similarly. This can thus be seen as an avoidance of a negative reinforcement. If people generally tend to do something which contradicts generally accepted values, then society's approbation, although in a sense present, is spread

thinly. Under circumstances which may give rise to society's approval of otherwise low-valued acts, or under circumstances which lead to society's condemnation of otherwise highly valued actions, both theories may become relevant. Behaviour may be motivated by an attempt to obtain approval and simultaneously be acceptable because of the possibility of diffusing the responsibility if things go wrong.

Given that both theories can be relevant, an effective prediction requires a detailed analysis of all aspects of the context in question. Decision-making behaviour in a judicial context represents a binary choice by the judge or juror between finding the defendant guilty and finding him innocent. In terms of current ideals and practice in most judicial systems in the Western Hemisphere, a decision of "guilty" can be taken to involve more serious risks than a decision of "innocent" in the sense that convicting an innocent person is viewed as a worse mistake than permitting a guilty person to go free. This is the position that will be tentatively adopted for the purposes of the present study. Doing so can be seen as analogous to the practice among experimental psychologists of treating Type I errors, those of rejecting the null hypothesis when in fact it is true, as worse (i.e. riskier) than Type II errors, those of accepting the null hypothesis when it is false (cf., e.g. Guilford, 1973).

In addition to taking the shift to a guilty decision as representing a risky shift, the shift to a higher estimate of the probability of the defendant's being guilty will also be viewed as a risky shift.

According to the diffusion of responsibility theory, as applied in a judicial context, one could predict that group discussion would tend to make judges less cautious, i.e. produce a risky shift. Thus, the theory would predict that individuals serving in the role of judges in a group, or making individual decisions after group discussion, should tend to give higher estimates of the probability of the defendant's being guilty and show a stronger tendency to give decisions of "guilty" than before group discussion. This would

be due to the diffusion of responsibility in the group making it easier for group members to take higher risks. One could likewise predict that a judge's expecting that after making such a decision individually he would discuss it with others who had made their own decisions on the basis of the same evidence, would lead to the judge's decision making being more risky than if he had not expected group discussion to follow.

According to the multiple value theory, on the other hand, discussion should tend to make judges more cautious, i.e. to produce a cautious shift, since caution is so highly valued in judicial decision making and the theory assumes the judge to strive after the highest value here. Thus, the theory would predict that individuals serving in the role of judges in a group, or making individual decisions after group discussion, should tend to give lower estimates of the probability of the defendant's being guilty and show a stronger tendency to give decisions of "innocent" than before group discussion. Similarly, one could predict that a judge's expecting that after making a decision individually he would reveal it to, or justify it in discussion with, others who had reached a decision on the basis of the same evidence, would lead to the judge's decision making being more cautious than if he did not expect group discussion.

Confidence in Judgment

Work on confidence in judgment has been particularly concerned with two major problem areas, one of these the question of how confidence can be measured and/or how well it can be generalized, and the other the question of how confidence relates to accuracy in performance.

In an early study, Wolff (1955) considered the generality of two measures of certainty, namely subjective certainty and behavioural certainty. Subjective certainty referred here to the degree of conviction experienced consciously by a subject, and behavioural certainty to the amount of information the subject requested before making a choice. In addition, Wolff investigated the relationship between

the measures of certainty and a measure of manifest anxiety. Only slight support was obtained for any commonality between the measures of subjective certainty and behavioural certainty. Those Ss who requested more information appeared to be less confident. As regards relations to manifest anxiety, a weak inverse relationship between the measures of certainty and anxiety was found.

Brim and Hoff (1957) treated the making of extreme judgment responses as a measure of desire for certainty. They found high correlations between these measures and other measures of subjective confidence. They concluded from this that individual differences in the desire for certainty are consistent from one measure to another. They also found significant differences between frustrated, satisfied and control groups in the desire for certainty. Frustrated Ss desired certainty most, satisfied Ss least. This finding suggests that strength of this desire can be increased or decreased by situational influences.

Kogan and Wallach (1960) emphasized attitudes towards risk as a correlate of judgmental certainty. Using the semantic differential technique to measure the S's evaluation of concepts relevant and irrelevant to risk, they hypothesized that evaluations of the risk-relevant concepts would be related to certainty of judgement, whereas evaluations of concepts not relevant to risk would prove unrelated to judgmental certainty. Their results supported their hypothesis: highly confident Ss showed greater extremity than Ss of low confidence only in those judgments relating to concepts that yielded a consistent picture of their evaluation of risk.

Oskamp (1965) investigated the relationship between confidence and the realities upon which the confidence is based. He, like Beach and Wise (1969) and Tversky and Kahneman (1974), used a confidence scale defining confidence in terms of expected percentage of correct decisions. Such a scale permits a direct comparison between the level of accuracy and the level of confidence. Oskamp studied the effect that the information available had on confidence levels, and in particular, the question of whether an increase in confidence

level was justified by a corresponding increase in the accuracy of the subject's conclusions. His findings indicated that in the case of the psychologists he used as subjects (clinicians with five years of experience, graduate students, and undergraduates) confidence levels continued to rise long after the accuracy of their conclusions had ceased to rise. There also appeared to be a stereotyping effect, in that after the subjects had made up their mind on the basis of information they had received earlier, they did not change it in face of new evidence. Oskamp concludes that an increase in feelings of confidence as a psychologist work through a case is not a sure sign of increasing accuracy of his conclusions.

An earlier study by Irwin, Smith and Mayfield (1956) likewise indicated that confidence continues to rise with an increase of information. Their Ss were presented sequentially with a series of cards upon each of which a number appeared. After presentation of a card the subject was to guess whether the mean of the deck of cards was greater or less than zero. For both males' and females' confidence increased with an increase in the absolute value of the mean of the cards seen.

Beach and Wise (1969) investigated whether subjective probability estimates and confidence ratings were equivalent measures of S' opinions about uncertain events. In essence, Ss made estimates and then rated their confidence in the accuracy of the estimates. Confidence ratings were high for extreme estimates, low for estimates near the point of 'equiprobability' and were uninfluenced by the additional information that was provided about events.

Tversky and Kahneman (1974) support the findings of Oskamp (1965) and of Beach and Wise (1969) that subjects are not correctly affected by additional information. However, these authors found subjects to respond differently when given no evidence than when given worthless evidence. When no specific evidence was given, prior probabilities were properly utilized; when worthless evidence was given, prior probabilities were ignored. In addition, Tversky and

Kahneman demonstrated that, even with a formal knowledge of statistical theory, subjects did not deal correctly with probabilistic information. The authors suggest that the specific search and problem solving strategies commonly employed in judgment under uncertainty lead to systematic and predictable errors.

The experimental evidence just reviewed has three important consequences for judgments made in a judicial context:

1. Confidence in the correctness of a judgment should be least at the point on the scale of subjective probability of the defendant's being guilty where the decision criterion is located. Similarly it should increase the farther - either above or below the decision criterion - the judge's estimate of the probability that the defendant is guilty is located.
2. Additional evidence could be expected to have little or no effect on the judge's basic opinion of whether the defendant is guilty or is innocent once his mind is made up.
3. Additional evidence might be expected to result in an increase in subjective confidence even when the evidence is totally irrelevant and hence worthless.

The latter two points suggest as well that a prosecutor or defense attorney might possibly achieve the best results for the prosecution and defense respectively by presenting their most persuasive evidence first and then continuing to present additional evidence up to a certain point, even though it may be weak or even irrelevant. This would imply the presence of a primacy effect (see Asch, 1952; Slovic and Lichtenstein, 1971, for a discussion of this effect).

On the other hand, whether a primacy or a recency effect is predominant can depend upon many factors (cf. Zimbardo and Ebbesen, 1969). Also, group processes occurring in a jury or a panel of judges might invalidate tendencies, such as those toward a primacy effect or toward the search and problem solving strategies which Tversky and Kahneman describe, found in individual decision making. Furthermore, the emphasis on caution toward the defendant in court decision making might have a similar effect. In addition, the frequent ambiguity

or conflicting nature of evidence in a judicial context might readily counteract a tendency for confidence in a decision that was tentatively made, to increase.

Perceived Influence in the Group

There is evidence that members of groups that are more homogeneous display less shift than do members of more heterogeneous groups (Vidmar, 1970; Willems and Clark, 1971; Fischer and Burdeny, 1974). Homogeneity was defined by Vidmar in terms of the similarity of Ss' risk taking behaviour generally, ascertained through their Ss' response to a shortened CDQ prior to running the essential experiment. Vidmar reasoned that, with greater discrepancy between group members in terms of risk preference, less risky members change more to conform with the risky norm displayed by the most risky group member. In addition, cohesive groups have been found to display behaviour similar to that of homogeneous groups (Back, 1951; Dion, Miller and Magnan, 1971; Yinon and Bizman, 1974). A group is regarded as cohesive if its members have a strong desire to belong to the group. Back found that in highly cohesive groups the group members change towards the partner's position more than they do in less cohesive groups.

Wallach, Kogan and Bem (1962) showed that persons rated high in influence also tended to be high in popularity. There was a positive relationship between the degree of risk taking evidence in prediscussion individual decisions and the extent to which group members were perceived by one another as influencing group decisions. According to Wallach et al. (1962), it is possible that high risk takers are also individuals who are more likely to take the initiative in social situations.

Rabow, Fowler, Bradford, Hoffler, and Shibuya (1966) examined the possibility that risky shift in groups could be explained by the norms which favour risky alternatives. They employed three types of tasks: those designed to produce differences between individual and group decisions, those thought to favour more conservative group decisions, plus a number of control tasks. Only on the control tasks were the group decisions riskier than the individual decisions. They concluded that the risky shift in groups was indeed due to the norms which favoured risky decisions. They obtained conflicting findings

concerning the individual characteristics of the most influential group members. On the norm conflict items, those perceived as leaders were found to be more conservative than the others, whereas when acting individually they tended to advise greater risk on commitment items.

Ellis, Spencer and Oldfield-Box (1969) found that extreme risk takers exert more influence than do non-risk-takers. Burnstein and Katz (1971), supported in their views by Foster and Linskold (1975), suggest that this effect may be due to "risky members" being more committed to their stand. These authors suggest that riskiness linked with confidence and with being "correct", thus resulting in greater perceived influence. Jellison and Riskind (1970) provide support for this notion through their claim that Ss attribute riskiness to other persons as a function of the ability those persons possess. Haley and Rule (1971) suggest that the perceived influence here may be due to the fact that extreme members are more stable in their opinions. As compared with these findings however, both Wallach Kogan and Burt (1968) and Myers and Murdoch (1972) found that riskier individuals were not more persuasive.

A similarly dissenting view is that of Hoyt and Stoner (1968), who suggest that, since risky individuals are assumed to be more capable of influencing others than are cautious individuals, risk takers are "leaders" whereas cautious individuals are "followers". These authors controlled the leadership effect by assigning Ss to groups based on similarity of risk taking preferences. They concluded that the leadership hypothesis cannot explain their results, which showed similar risk taking propensities in their equal-risk-taking groups as in their randomly composed groups.

Boulanger and Fischer (1971) differed from the previous researchers in that they started with the assumption that leaders may not necessarily be high risk takers, but may be as well low or moderate ones. They suggest that if the leadership hypothesis is valid, then leaders ought to be able to shift group decisions in the "cautious" direction as well if instructed to do so.

Neither general value theory (Brown, 1965; Stoner, 1968) nor the diffusion of responsibility theory (Wallach, Kogan and Bem, 1964)

specifically deny the possibility that one individual is more influential than another in accounting for the shift phenomenon within the group. However, both theories imply that individual differences are irrelevant to this phenomenon. In contrast, both leadership (Marquis, 1962) and release theory (Pruitt, 1971), where the latter is one version of the leadership theory, emphasize the important role of individual differences. Such a position is supported by experimental evidence (Wallach, Kogan and Bem, 1962) that group members show strong agreement regarding which one of them is the most influential. However, it has been argued (Clark, 1971) that such "perceived" influence may not be the same as "real" influence, since reporting a fellow group member to be influential cannot be regarded as reliable evidence that he in fact was.

The leadership theory has attempted to identify the leader by hypothesizing him to be the most persuasive. On the other hand, Wallach, Kogan and Burt (1968) found that persons perceived as influential were not more persuasive than others.

The release theory is not invalidated by such results, however, as the other forms of leadership theory are, since it attributes no characteristics of perceived persuasiveness to its influential individuals. The leader is considered simply to be the individual who displays an opinion that has the effect of releasing his colleagues from the social constraints they had assumed to exist (Pruitt, 1971). Pruitt (1971) suggests that his "releasing leader" may be identified not so much by his personality characteristics as by the fact that he has a greater influence on the other members of the group than they have on him. If this is the case, release theory would then say that the views of the group members who have been influenced by the releaser have been subjected to "social effects" (i.e., the weakening of social constraints as distinct from the "logic" of argumentation), whereas the "releaser" holds views acquired as a result of factors in operation before joining the group.

The two sources of influence represented here - i.e., social influence and the facts of the case - ought to have differing effects on behaviour in a judicial context. A judge or jury member who was primarily influenced by the facts of the case could be expected to

respond more directly to the changing nature of the evidence placed before him than would one who was more strongly affected by social influence, since the social influence should largely evolve during group discussion.

It might be assumed that a member of a judicial decision making body who is assessed as having greater influence than the others is one who is primarily influenced by the facts of the case, whereas those whose influence in the group is assessed to be less are persons who more strongly respond to social influences. If this be assumed, one can hypothesize that the more influential appearing member should show greater variation in his assessments of the evidence from one item to the next than would the less influential appearing members, particularly before group discussion takes place. At the same time it can be hypothesized that the less influential appearing members, because of their greater susceptibility to group influence, should show a greater shift (cautious or risky, as the case may be) from prediscussion to postdiscussion conditions than would the more influential appearing members. Even under postdiscussion conditions, however, it could be supposed that the more influential appearing would show greater item-to-item variation in their assessments of the evidence. For one thing, the assessed leader may simply fail generally to fully win over his followers to the view which he propounds. Secondly, being one step ahead of the others may impress the group with the influential qualities of the person in question and thus give them reason to view him as the most influential.

The Effect of Age, Sex and Education Level on Decision Making

The possibility of an effect of demographic variables such as age, sex and education on decision making has often been ignored in studies in which appropriate data were available or could readily have been obtained.

Concerning the sex variable, much research on factors other than sex which influence decision making has been done using one-sex samples (e.g., Boulanger and Fischer, 1971), or samples composed

of almost but not entirely one sex (e.g., Hoyt and Stoner, 1968). In other cases, both sexes were tested but sex differences were not investigated (Rabow, et al. 1966). In at least one case differences in performance between the sexes were ignored since in the authors' view no parsimonious explanation was available (Vidmar, 1970).

Some research has nevertheless been directed towards discovering the effect of sex on decision making and hypothesizing the causes of it. There is little doubt that an effect does exist, but as the following discussion indicates, the relationships are complex. Wallach and Kogan (1959) compared the findings of Pettigrew (1958) and of Wallach and Caron (1959) that males were more extreme and daring in judgments which involved quantitative and geometric factors, with the findings of Shapiro and Tagiuri (1959) that women made more extreme positive or negative judgments than men in tasks which involved judgments of personality traits. Wallach and Kogan suggest here that men's superior quantitative skills and women's superior "intuitive" abilities may account for a greater willingness on the part of both sexes to go out on a limb and risk the consequences of error in their respective spheres of competence. Proposing that a judgment or decision has two analytically distinguishable components, namely the level of certainty with which a decision is made and the decision itself, the authors examined the extremity of judgments made by men and women at varying levels of certainty. They found that women were more conservative than men on items concerning risk of income loss, death, and a football defeat, whereas men were more conservative than women when the risks involved were those of an uncertain artistic career and a potentially unhappy marriage.

The authors' interpretation of these findings is that the members of each sex express a special willingness to take risks in matters of particular importance to them and that cultural values determine the channels of fulfillment and expression for each sex.

Wallach and Kogan attribute to "education" (which they apparently understand in terms of social learning and cultural norms) their finding that under conditions of uncertainty women are more

conservative than men whereas under conditions of subjective certainty they are more extreme than men. They suggest that the greater conservatism of women under conditions of certainty is due to the fear of punishment for inappropriate behaviour in new situations very possibly being more severe for girls than for boys in American society. Extreme judgments of women under conditions of high certainty, they propose, is expressive of a "counter-phobic" reaction against the pressures just described.

The implications of this study, in the authors' own words (Wallach and Kogan, 1959), are that "one can make no simple generalization about sex differences in judgment and risk taking, but rather must analyze the level of certainty of the decisions in question, and the subject matter they concern" (p. 564). This statement is in no way devalued by the fact that the same authors, using the identical items, found group influence on individual risk taking to be similar for each sex. Rather, it might raise questions as to what it is about group influence that blots out the effect of sex.

Crandall (1964) also observed, as had Wallach and Kogan, that different researchers reach contradictory results as to which sex tends to be more conservative or extreme in its judgments. But where Wallach and Kogan attribute the difference to the different interest of the items for the two sexes, Crandall suggests that the distinction lies in whether the item is affectively "loaded" or "neutral". Items of the former kind they consider to involve conceptual judgment, and those of the latter kind evaluative judgment. Using this kind of classification of the judgmental processes, Crandall's results support the findings of some studies that women are less conservative than men on tasks involving affective evaluation whereas the opposite is true for tasks calling for affectively neutral judgments. For example, Cvetkovich (1972) found males more extreme on betting tasks. However, Crandall also found that the lesser evaluative conservatism of women (i.e., their greater extremity of judgment) is primarily dependent upon those occasions when their judgments are positive evaluations. This lends further support to Wallach and Kogan's view

of the importance of social norms as a factor influencing the behaviour of American women.

In addition Crandall found that highly anxious men were more conservative than less anxious men, while for women results were the opposite, highly anxious women being less conservative than less anxious women. Crandall finds no way to account for these results. The results at the very least emphasize the importance of analyzing data separately in terms of sex in all experiments on which anxiety could have some bearing.

With regard to the effect of age on decision making, it should be noted that almost all the studies mentioned thus far used college students as subjects. Since a vast amount of decision making occurs after this age, it would obviously seem worthwhile to investigate the effect of age on decision making.

Kogan and Wallach (1961) indicated the necessity of controlling for confidence level when investigating the effect of age on judgmental extremity. Previous studies, they suggest, have been confounded by the effect of confidence levels varying with age. The authors stress the implications, as well, of the findings that aged individuals suffer decrements in performance (Korchin and Basowitz, 1957), and are characterized by greater caution (Basowitz and Korchin, 1957). Kogan and Wallach's findings are essentially that, under conditions of high confidence, judgmental extremity decreases from young adulthood to old age for both sexes - whereas, under conditions of moderate confidence, it increases from young adulthood to old age in the case of females only. They found that, under conditions of high confidence, older women are more extreme than men of similar age, a finding obtained in comparing younger men and women as well. The sex differences outlined here support Wallach and Kogan's (1959) suggestion that a "counterphobic" release is responsible for women's extreme judgments under conditions of high confidence. The authors suggest that, when a woman achieves old age, such "counterphobic" tendencies are partially attenuated, a relationship which their findings seem to reflect. Their results also support

the assumption that the degree of disutility of failure becomes less situation-specific and more generalized as a person grows older, and further, that the disutility of failure increases from young adulthood to old age for each sex.

The same authors (Kogan and Wallach, 1961) investigated relationships between subjective age (self-image on the dimension of "elderly") and caution in decision making. They hypothesized that self-identification is the factor largely responsible for the increase in caution with age. In investigating this it was obviously necessary to control for chronological age. Their findings indicated a strong relationship to exist between subjective age and caution, but only in the case of Ss of low anxiety. For high anxiety Ss heterogeneous results were obtained and were tentatively interpreted as these subjects being anxious for different reasons. The authors suggest that it is not reasonable to equate an older individual for whom high anxiety has been a life-long condition with a likewise older individual for whom aging as such is a source of anxiety.

Other investigators' findings suggest that an increase in caution with age is not a phenomenon applying only to later life. Light, Zax and Gardiner (1965) compared children with college students and found that the children made more extreme judgments. Similarly, Chaubey (1974) found that boys (10-15 yrs.) and young adult males (20-30 yrs.) had a stronger preference for risky decisions than older males (48 yrs. and over). An underlying theme in these papers appears to be that the younger age groups are concerned with the "glory" of possibly "winning", whereas the older age groups are primarily concerned with avoiding failure. However, a study by Spencer, Williams and Oldfield-Box (1974) reached a conclusion that contradicted all of the authors just mentioned. Rather than finding important differences in the decision making of young and old, the authors found their attitudes to risk in decision making to be similar. It should be noted, however, that Spencer et al. changed the format of the choice dilemma problems they employed as compared with most other investigators who had used such items. The change involved providing particularly

"life-like" details about the imaginary person who is faced with the dilemma.

On the whole, the general impression appears to be that greater caution is exercised with greater age; however Spencer et al.'s work suggests that it is possible that this is not the case if Ss imagine themselves giving advice to other individuals as distinct from someone on whom they project their own personality.

The literature which has just been considered suggests that both sex and age have an influence on judgmental behaviour. Education level is another variable which can readily be supposed to have an effect of judgment behaviour although empirical support for this appears to be lacking. Studying the effect of these variables within a judicial context is clearly of interest since little has been done to investigate it.

None of the theories considered thus far have suggested that the logical appeal of an argument is responsible for the shift phenomenon. (Regarding the release theory, the logical appeal of an argument is assumed to affect the releaser but to not play a part in the shift displayed by other group members). As compared with all these theories, the relevant argument theory (Nordhoy, 1962; Vinokur, 1971) gives considerably more credit to the inherent logical appeal of a well-founded argument. The theory suggests that commonly held values within the group result in members developing arguments themselves and reinforcing each other's developing of arguments in favour of the values involved (Brown, 1965; Teger and Pruitt, 1967; Stoner, 1968; Vinokur, 1971). It is assumed that, since each individual evolves his own arguments at the same time as he hears new arguments that he had not previously thought of, his confidence rises and he proceeds to make more extreme decisions.

In the present context one could suppose that, if the logic of the argument is an important factor (as distinct from the fact that the argument is an important one), this should have, with many arguments, a greater effect on persons with a higher standard of education than on persons with a lower education level. Hence, in a judicial context, one might expect, in terms of the relevant arguments theory, that

more highly educated Ss would display a greater degree of shift from individual prediscussion conditions to group discussion conditions, as well as to individual decision making conditions after group discussion. Such a difference in shift would reflect the assumption that the more highly educated individual is more likely to be persuaded by the logically coherent arguments he is exposed to within the group than is the less educated individual.

Just as with release theory, it is possible to argue that if the individuals in the decision making body are strongly influenced by the facts of a case, their responses should show greater variation when the evidence is of a changing or conflicting nature than it would if the individuals are primarily influenced by social factors. Hence, in terms of the relevant arguments theory, the responses of the more highly educated could be expected to display greater variation from one item of evidence to the next.

As has already been indicated, in the most European systems cautious judicial decision making might be seen as a strong tendency to find the defendant innocent "when in reasonable doubt". However, the dimension of risk versus caution is a difficult one to define in a completely adequate way, whether for a judicial setting or for judicial context simulated in the laboratory. It is possible that in either case a neutral position may be regarded as best expressing a cautious stand. Nevertheless, in a judicial situation a neutral position may be hard to maintain - due to, on the one hand, the demand that the judge consider the accused as innocent until found guilty and, on the other hand, the fact that compelling evidence may exist making both the latter position and a truly neutral position difficult to uphold. The danger exists as well that in the laboratory situation the subject may refer unduly much to his experiences in other decision-making contexts. Indeed, the concept of "caution" can be interpreted very differently, according to the circumstance and the cultural context. Such difficulties notwithstanding, it appears worthwhile to endeavour to ascertain what the subjective perception of caution is within the population used for this study.

All the investigations known to the author have shown males to demonstrate increasing caution with increase in age (Wallach and Kogan, 1961; Light, Zax and Gardiner, 1965; Chaubey, 1974). Hence, it may be fruitful to operationally define a cautious decision or cautious decision making behaviour here as that type of decision towards which the older male Ss tend. If this should prove to be significantly different from one's a priori definition, it might point to a need to reevaluate this definition and other data in the field.

As has already been indicated, males and females do not display the same tendencies of increased conservatism with age (Wallach and Kogan, 1961). In addition, some studies have revealed item-specific responses, some items eliciting greater confidence in females than in males or vice versa (Wallach and Kogan, 1959; Crandall, 1964; Cuetcovitch, 1972). These inconsistencies, highlight the complexities involved in an investigation of sex-specific differences here.

Rigidity and Dogmatism

In "The Open and Closed Mind" Rokeach (1960) indicates that many studies of rigidity and dogmatism show a positive correlation between scores on scales of dogmatism and of rigidity, the correlations lying between about .37 and .55. The close empirical relationship between these two apparently similar dimensions suggests difficulties in distinguishing between them.

As concerns rigidity, Heinz Werner (1956) suggested that a distinction be made between two conceptualizations of rigidity, its referring in the functional sense, to a sluggishness in the variation of response and in the structural sense to the relative independence of regions, greater independence meaning greater rigidity. Werner's distinction between these two different views of rigidity shows a clear parallel to the distinctions between rigidity and dogmatism put forward by Rokeach (1954), Rokeach, McGovney and Denny (1955), and Rokeach and Fruchter (1956), distinctions which have dominated the literature ever since. Although Rokeach (1960) declares that rigidity refers to the degree of isolation between systems (which sounds similar to

Werner's "relative independence of regions"), he also states that rigidity is involved in the manner in which one tackles specific problems. This view is clearly articulated in Rokeach et al. (1955), where a rigid personality is seen as being slower in the overcoming of individual sets. This appears to parallel Werner's suggestion that rigidity refers to a sluggishness in the variation of response.

Goldsmith (1967) highlights more clearly observable characteristics of the rigid person's behaviour. His results indicate (a) that rigid Ss show a higher ratio of expected chances of success to actual success, their being in this sense more optimistic, (b) that rigid Ss more strongly avoid assigning items to neutral categories (in this sense displaying a greater intolerance for ambiguity), and (c) that rigid Ss reach decisions faster than non-rigid Ss. Goldsmith emphasizes, on the other hand, the importance of situational factors in partly determining the validity of personality variables in predicting decision-making behaviour.

Concerning dogmatism, Rokeach's (1954) definition is as follows: (a) a relatively closed cognitive organization of beliefs and disbeliefs about reality, (b) the organization of these around a central set of beliefs about absolute authority, (c) this providing a framework for patterns of intolerance and qualified tolerance towards others. This appears to parallel Werner's view of rigidity as the degree of segregation in the structural organization of personality. Rokeach et al. (1955), who consider dogmatism to primarily involve higher cognitive functions, see dogmatic persons as being slower in integrating new sets of information than are persons low in dogmatism. They view the dogmatic personality as being poor at synthesizing but is as proficient as anyone else at analyzing. They compare this with the rigid personality who they describe as poor at analyzing but as showing no tendency to be weak in synthesizing material.

Perhaps because of the fact that rigidity and dogmatism are highly correlated, considerable work in the area has concerned similarities and dissimilarities between the two variables. Rokeach and

Fruchter (1956), using factor analytical techniques, found dogmatism to be clearly discriminable from authoritarianism, ethnocentrism and rigidity; they reported dogmatism, paranoia and self-rejection to be factorially similar. This last finding and that of Rokeach and Bonier (1960) that "closed Ss" are more anxious and more preoccupied with the future suggest anxiety and extremity of judgment to be related. The latter authors, who reported that in a group of male subjects anxiety resulted in more conservative judgments, found dogmatism to have the reverse effect. Also Parrott (1971) found separate factorial structures for rigidity and dogmatism.

Having considered the definition of these personality variables, one can turn to research focused on or suggesting how they may influence judgment, particularly judgments within a group.

Long and Ziller (1965) view dogmatism as a defense mechanism which interferes with the processing of predecision information when this becomes threatening. (Admittedly, the term "defense mechanism" is employed here in a manner differing from its use within classical psychoanalytic theory, (cf. Sjöbäck, 1973). Non-dogmatic individuals, according to Long and Ziller, are slower at making decisions, show more predecisional search, and require more time for psychophysical judgments. Concerning confidence, these authors claim that as increasing amounts of information are presented or becomes available, dogmatic persons show a steeper rise in level of confidence than non-dogmatic. This can be seen in relationship to the tendency discussed by Tversky and Kahneman (1974) for additional information, past a certain point, to no longer be utilized in judgment but to nevertheless lend to a rise in the level of confidence.

As regards the dogmatic person's tendency to be influenced by others' opinions, there is the finding of Hatton and Snortum (1971) that dogmatic persons are not more susceptible than non-dogmatic persons to biased data about an incident after viewing a film about it. However, as against this one should consider other factors that may enter in. For example, according to Leach (1967), a potentially

dogmatic person (where dogmatism has been shown to derive from an authoritarian upbringing) is influenced by an authoritarian figure, he may well prove susceptible to the trait.

In conclusion, as regards the personality factors of rigidity and dogmatism, one can suppose (from Rokeach, 1960) that the effect of these variables on subjects' judgments will depend on the task involved. Analytical judgments, which can be assumed to be frequent in judicial decision making, could be expected to elicit different responses from highly rigid subjects, who apparently are weak at analytical tasks, than from highly dogmatic, for whom no such weakness has been reported, (It is assumed here that the highly rigid person is not highly dogmatic or vice versa as admittedly can readily be the case). At the basis for this can be assumed to be a greater difficulty of rigid as compared with dogmatic Ss in integrating beliefs into a new system which contradicts their everyday system. Thus, rigid persons could be expected in a judicial context to have greater difficulties than dogmatics integrating new evidence into their overall evaluation. For persons here generally, the openness to influence from other group members would presumably depend upon the evidence to be judged. However, since high rigidity and high dogmatism are frequently found in one and the same individual, rigid and dogmatic persons alike might be expected to be less open to social influences than are non-rigids and non-dogmatics, when evaluating evidence.

The rigid person's characteristic of higher optimism (Goldsmith, 1967) suggests he or she to be less apprehensive of being blamed for a wrong verdict in a judicial context than is the less rigid person. Goldsmith's conclusion that rigid Ss are more optimistic was based on his finding that these Ss overestimated their chances of success when performing tasks involving skill. In a situation where Ss were performing chance-related tasks his findings were more ambiguous. Since decision-making in a judicial context would seem to clearly be a task involving skill on the part of the judge, one would expect a rigid S to be over-optimistic in rating his chances of success. Hence, when making a decision prior to group discussion,

a rigid person should give more uninhibited expression to his views. These views should tend to be more extreme than those of non-rigid individuals due to the rigid person's greater intolerance of ambiguity (Brenkelmann, 1960; Goldsmith, 1967). Since the rigid S has the characteristic of being optimistic and thus believes that he will succeed in making the right decision - he has less need to diffuse responsibility for a possible failure. Hence, the rigid person could be expected to display less shift in decision-making behavior between individual decision-making conditions prior to group discussion and group decision-making conditions with group discussion or from the latter to individual decision-making conditions after group discussion.

Rigid persons have also been characterized as displaying a greater resistance to changes than flexible persons (Rokeach, 1954; Rubenowitz, 1970). Goldsmith (1972), like Fiske and Rice (1955), refers to rigidity as the failure to alter responses when faced with changed conditions. The prediction just made that rigid Ss will show less shift is in accordance with this way of looking at rigidity.

Rokeach and Bonier (1960) found dogmatic persons to be more anxious and preoccupied about the future than non-dogmatic persons. One way of escaping this would be to diffuse responsibility to other members of the group (Kogan and Wallach's 1967 findings indicate more anxious individuals to show a greater shift toward risk than less anxious individuals). The diffusion of responsibility theory could thus predict that dogmatic persons should display a greater shift between individual conditions prior to group discussion and group conditions with group discussion to consensus, as well as from the latter to individual decision-making conditions after group discussion, than non-dogmatic persons.

Extremity of Judgment

Some research findings tend to support the notion that in social situations individuals avoid expressing extreme opinions or

judgments. For instance, Allport (1924) demonstrated that when judging odors in terms of pleasantness and weights in terms of heaviness, subjects tend to make more extreme judgments alone than in a group. According to Allport, "there is a tendency towards moderation in judgments made in concert with others, the individual avoiding those extremes of judgment at either end of the scale which he does not hesitate to make when judging alone" (p. 274). Allport's findings were confirmed by Farnsworth and Behner (1931), using larger populations. The authors note that although statistical significance was not always achieved, the subjects overestimated the weights in almost every instance.

Other studies have supported an opposite view, namely that group discussion to consensus yields a more extreme attitude, decision and response set. Moscovici and Zavalloni (1969) found that group discussion produced a shift towards an attitude more extreme than the average of group members. However, the direction of the attitude in question remained unchanged. Thus, group discussion to consensus made the subjects judge favourable items as more favourable and unfavourable items as more unfavourable. There was no shift towards extremity in the case of ambiguous items. Similar item-dependent conclusions were reached by Andrew and Johnson (1971), who suggest that ratings by groups are only more extreme than ratings made by individuals when judgments are based on favourable or unfavourable cues, not when ratings are based upon neutral cues. Their findings were obtained both for risk-free and risk-salient items. Thus, according to the authors, these results support the idea that the polarizing effect of group discussion occur for many kinds of stimuli and not just for items which contain an element of risk. Since in both the studies just named the effect obtained could not be attributed to any one characteristic such as riskiness which was shared by the items, both studies can be said to support the general values hypothesis of Brown (1965) and of Stoner (1968).

The work of Doise (1969) corroborated the findings just cited, that the opinion of the group was more extreme than the average of the individually-held opinions of the group members. Moreover, Doise

reported that a confrontation with the opinion of a rival group concerning their own group opinion brought about an even more extreme individual and group response than in the absence of the rival group. The opinions of the extreme members, Doise states, were more accepted by the group under these conditions. This research supports the assumption that extra-group influences cause more moderate group members to emulate the more extreme. At the same time, such behaviour has also been observed without the use of a "rival-group" condition (cf. Doise, Op. cit.). Such findings support the leadership theory (Marquis, 1962) which claims that some individuals holding extreme opinions - regardless of whether the salient characteristic of the opinions is their riskiness, their caution or some other characteristic - are more persuasive than other individuals who are more neutral in their opinions. The more persuasive individuals in a group would, according to this views, be able to account for the group shift. Similarly, Ellis, Spencer and Oldfield-Box (1969) found support for their assumption that extreme members of a group exert greater influence than less extreme members and tend to bring the latter around to their point of view. Results reported by Lamm and Troummsdorf (1974) support the same conclusion. Myers and Murdoch (1972), on the other hand, in testing this hypothesis, found no relationship between the extremity of a person's views and the extent to which he dominates the discussion. Their results are in accordance with those of Wallach, Kogan and Burt (1968), who found that persuasiveness was not a general characteristic of high risk takers, neither in male nor in female groups.

Extremity of judgment has been shown by some researchers to be related to situational, demographic and personality variables. Brengelmann (1960) found a positive relationship between rigidity and extremity of response. He also claimed extremity of response to be general to both positive and negative attitudes. Kogan and Wallach (1965) emphasized additional factors. They hypothesized that aspects of judgmental behaviour such as level of confidence and extremity of judgment would be influenced by personality and situational factors. Their results showed that under neutral instructions conditions subjects with low anxiety levels displayed greater extremity after failure than after success, whereas high

anxiety subject displayed lower extremity following failure and higher extremity following success. On the other hand, under conditions of intelligence testing, low anxiety Ss showed higher extremity after experiencing success than after experiencing failure.

Investigating the relationship between sex, confidence and extremity, Kogan and Wallach (1964, 1965) found that under conditions of high confidence, females showed a marked decline in the extremity of their post-consensus judgments whereas there were no significant shifts for men. Under conditions of low-confidence, males showed a decrease in the extremity of their subsequent post-consensus judgments. The overall tendency was that of a shift in the direction of decreased extremity after group discussion to consensus, although under different conditions of confidence for males than for females. However, Doise (1971), in re-analyzing Kogan and Wallach's results, remarks that the group judgments were significantly more extreme than the average of the individual judgments of group members.

Rim (1964), investigating the personal characteristics of the extreme member, found that extreme risk-takers tend to have high scores in extraversion and in need for achievement.

Light, Zax and Gardiner (1965) investigated the relationship of age, sex and intelligence level to extreme response style. Using Rorschach inkblots and semantic differential scales, they found that older children and those of high I.Q. employed fewer extreme ratings and a greater number of intermediate ratings than younger children and those of low I.Q.. The authors cite the findings of Berg and Collier (1953) of sex differences in extremity ratings, but their own results indicate that sex had no significant influence on extremity.

Hamilton (1968) sums up research findings on personality attributes associated with extreme response style. He indicates that females have generally been found to display more extreme responses than men. Only in one case, he notes, have males been shown to make significantly more extreme responses than females. Another factor which Hamilton

considered is that of age. His own results indicated children and adolescents to have a tendency to make more extreme responses than adults. Similarly, he found elderly adults to make less extreme responses than adults aged 20-59.

Factors which may influence extremity of judgment have been considered thus far in a general sense, without specific regard to the special characteristics of a judicial setting. There, a judge's tendency toward "extremity" could be thought to be more frequently expressed in terms of the severity of the sentence than in terms of the binary decisions of guilty or innocent. However, it could also be expressed as the tendency to deviate from the mid-point on the probability scale (i.e., from 50 %) in estimates of the probability that the defendant is guilty. For example, a S who estimates this probability to be 42 % after being presented with one piece of evidence and then to be 27 % after being presented with another has become more extreme in his judgment, whereas if his first estimate is 85 % and his second estimate 60 % he has become less extreme.

Two theories that appear particularly applicable to group factors affecting extremity of judgment in the judicial setting are the release theory and the general values theory. The release theory (Pruitt 1971), regarded as a variety of the leadership theory (Marquis, 1962), can be applied to either a risky or a cautious shift. According to the theory, a shift occurs in group discussion because the "leader" is seen to favour a shift from the neutral position to one of the extremes. In doing so he releases the other group members from the social constraints favouring conformity to what can be referred to as a "golden mean", thus producing an extreme shift, i.e. a shift to the one extreme or the other, whichever is closer (toward 100 % when above the mid-point on the probability scale and toward 0 % when below the mid-point).

Similarly, the multiple value theory can likewise account for both a risky or a cautious shift. However, as will be shown, this theory should predict a cautious shift where the release theory should produce a risky one.

As has already been indicated, in a judicial context, where great emphasis is placed on caution toward the defendant, the multiple value theory can be interpreted as stating the following: (a) caution is more highly valued than risk; (b) each individual in a decision-making body considers himself to more closely approximate the valued ideal of being cautious than do most other persons, or the other members of the group; and (c) this leads each member to shift in a cautious direction under group conditions, so as to be as sure as possible of conforming with this ideal.

However, it can be assumed that the ideal point on the scale of caution toward the defendant never lies at the very extreme, since the court system does demand that some defendants be found guilty. It may be that, when the probability that the defendant is guilty is assessed as less than 50 %, there is no tendency for group influence to produce a cautious shift. Under such conditions there is no immediate danger of false conviction, whereas too low an estimate here might make it logically difficult or impossible for later, more incriminating evidence to raise the probability of guilt sufficiently high for the defendant to be convicted at all. Therefore, under these conditions a certain risk toward the defendant may be not only condoned but seen as more important than caution.

Thus, according to the multiple value theory, a risky shift can be predicted to occur when the probability of guilt is viewed as less than 50 %, whereas (in line with (a), (b) and (c) above) a cautious shift can be predicted to occur when the probability of guilt is viewed as higher than 50 %. Taken together, these two tendencies would amount to a group-induced shift toward intermediate values on the subjective scale of probabilities that the defendant is guilty, i.e. to an intermediate shift, according to multiple value theory.

A question to consider in connection with both theories is how persons would react to individual judicial decision-making tasks performed without expectation that group discussion would follow. According to the release theory, one might predict that probability

estimates here would be less extreme than when group discussion is expected to follow, since an expectation of group discussion might have a releasing effect similar to that of the group discussion itself. Similarly, though with opposite result, one might predict, according to the multiple value theory, that probability estimates of the defendant's guilt made without expectation of group discussion would be more extreme than when group discussion is expected to follow, since an expectation of group discussion might again have an effect very similar to that of the group discussion.

Judicial Decision Making

A number of researchers have been concerned with more life-like judicial decision making environments. Gaudet (1949) argues that if it be assumed that the sentence a convicted person receives is determined in part by unwritten laws and in part by the "human equation", i.e. the personality of the judge, it can be maintained that the latter represents inequalities and even injustices in the administration of criminal law. Gaudet investigated in a global way whether a judge's personality is associated with the kind of judgment he made. He concluded from a survey of court records that judges were far from objective and that one could ascribe the considerable differences he found between judges in manner of sentencing to differences in personality.

Nagel (1962) attempted to pin down more specifically some of the "personality" factors that are reflected in judges' different sentencing records. He found, for example, using a Liberal-Conservative Questionnaire, that more liberal judges tend to be more biased in favour of the defense. Other factors which proved important in the background of judges were factors of political party, religion and previous occupation. As an example, judges who had previously been prosecutors tended to be biased in favour of the prosecution, regardless of what political leanings they had.

Another example of a study involving court records is that of Main and Walker (1973). The authors studied cases in which U.S. Federal judges

had to make decisions in response to challenges concerning the constitutionality of state or federal statutes or of government policy. Judges made "riskier" decisions (decisions to strike down the statute or policy in question and to declare it null and void) when sitting as a group than when making a judgment as individuals.

Various laboratory investigations have been concerned with whether a judge's or a jury's impressions of the defendant's personality bias the decision making process, either for or against the defendant. Laughlin and Izzet (1973) found that simulated juries made up of experimental subjects chosen for their similarity to the "defendant" recommended more lenient sentences than juries judged to be dissimilar to the defendants. It was assumed that a defendant who reflects views similar to those of the subject is regarded by the subject as more attractive.

A number of investigations in the same area have corroborated the findings of the Laughlin and Izzet study. Mitchell and Byrne (1973) found that the tendency to give more lenient sentences to defendants seen as more similar to the juror is enhanced if the simulated jury is more "authoritarian". Izzet and Leginsky (1974) considered an effect of the reverse type. They discovered what they termed an "Eureka effect", which was that in non-homogeneous juries the bias of the more dogmatic members towards attractive defendants tended to be reduced. The investigators suggest that the reduction in bias may have simply been due to discussion in such non-homogeneous juries revealing the bias and thus neutralizing it. If this was indeed the case one might have expected that the bias among the non-dogmatic jury members towards defendants seen as similar to them should have also been reduced. Although there was no sign of this, the authors suggested that this might be attributed to the effect of the Attica Prison riots, which received much publicity at the time of the experiment, the latter being conducted in the vicinity. (The riots were in response to apparently severe abuse of prisoners by the prison wardens.)

A different interaction between the jury and "attractiveness" of the defendant was explored by Izzet and Fishman (1976), who discovered

a condition under which the attractive defendant was sentenced more severely. The defendant was presented as having either high or low external justification for his crime, and was described in such a way as to be either attractive or unattractive to the subject. Although one might well have supposed that under all conditions the attractive defendant would have received a more lenient sentence, the attractive defendant with low external justification for his crime was found, in line with cognitive dissonance theory, to receive a more severe sentence than his unattractive counterpart. It was reasoned that the subject felt "let-down" in his expectations of the more attractive defendant.

Having considered the interaction between the juror and the defendant, one can likewise consider the effect of evidence upon the juror, irrespective of such interaction. The common-sense expectation is that, the greater the amount or strength of the evidence is pointing in a particular direction, the greater will be the confidence of the judge or juror. Murray (1967) showed that a piece of evidence in a judicial context in favour of a point of view indeed raises the level of belief in that point of view. However, two pieces of evidence as such were not found to be more effective than one, other things being equal. Somewhat similarly, Cohen (1964) varied the quantity of evidence by presenting subjects with the testimony of a varying number of witnesses. Under some conditions the testimony involved identical events, whereas under other conditions there were dissenting groups of witnesses reporting different events. Contrary to his expectations, Cohen found that under a number of different conditions some subjects consistently believed the minority groups of witnesses rather than the majority groups. For most of the Ss the ratio between the number of witnesses in the majority group and the number in the minority group was a crucial factor in deciding confidence levels, but the relationship was not a linear one. A single dissenting voice had a disproportionate effect, and under some circumstances a lone witness apparently carried more weight than he would if supported by others. It should be noted that Cohen's (1964) conception of "amount" of evidence differs from that, for example of Tversky and Kahneman (1974), whose analysis

in turn is partly based on Bayesian type measures of subjective probability revision (for a discussion of the application of Bayes' theorem to probability estimation see, e.g., Edwards, Lindman and Savage, 1963). Cohen also fails to deal explicitly with such questions as the redundancy or the perceived reliability of evidence (see, e.g., Schum, 1975).

The degree of homogeneity of the jurors making up the jury, as regards their degree of dogmatism, appears to have possible influence upon the jury verdicts. Empirically, it may be harder to detect a general tendency toward shift in homogeneous groups than in heterogeneous ones. This was suggested by Vidmar (1972), who studied group-induced shift in a simulated jury decision situation. Vidmar concludes that the effect of dogmatism is harder to detect in homogeneous than in heterogeneous groups since it is "washed out" due to a polarization effect within each group. The conclusions of Myers and Kaplan (1976) that whatever are the dominant leanings of a group, these are enhanced during group discussion in a simulated jury contradict the findings of Vidmar (1972). Kutschinsky (1970) who used homogeneous groups, reported that it was hard to change an individual's decision both when he had arrived at it alone, and when he reached it in a group.

One can assume that panels of judges often have the characteristics of homogeneous groups due to the extensive training and selection procedures they undergo. Back's claim that in highly cohesive groups the group members change more toward the partner's arguments than in less cohesive groups, would seem clearly applicable here since judges may be assumed to be relatively cohesive. In Sweden, few judges leave the profession before the obligatory retirement age, which in itself is somewhat suggestive of cohesiveness. The disadvantage of homogeneous and cohesive groups might be that their members tend to be closed to new ideas and to develop group biases. The advantage might be that the findings of courts would be likely to be less disparate than with more heterogeneous groups, a given defendant being treated in more nearly the same way on every occasion.

Although there is a general lack of empirical evidence concerning the shift phenomenon in a judicial context, there is one finding, in the study of Main and Walker (1973) already cited, indicating that judges sitting in panels of 3 reach more extreme decisions than when sitting alone as individuals. As an extreme decision here was regarded the striking down of a federal statute or government policy, while a cautious one was represented by a decision to uphold the validity of the statute or policy. The authors conclude that the judge is more likely to find constitutional defects when sitting in a collegial atmosphere than when he makes the entire decision individually. Of some applicability also seems to be the finding (Runyan, 1974) that groups composed of friends rather than strangers under some conditions take more risky decisions.

There are two investigations which, although conceived from quite different point of view, may together throw some light on factors that may sometimes be confounded in actual judicial decision making. Heimbach (1970) claims that group discussion often results in a shift in the decision concerning the length of the sentence but not in that of whether the defendant is guilty. This suggests that judges may be partly expressing, through the severity of the sentence they decide upon, their level of confidence in the correctness of a verdict of "guilt". This point of view is supported by Gaudet (1949), who claims support for the hypothesis that judges tend to express a lack of certainty concerning the guilt of a defendant whom they convict, in terms of a more lenient sentence. Heimbach suggests that what happens during group discussion is not primarily an attitude change but a change in perspective.

Bolding (1960) writing as a legal scholar, considers the question of whether probability evaluations are involved in evaluating judicial evidence. He concludes that this is indeed the case. He maintains also that the "point of proof" (the decision criterion, which he distinguishes from the "point of evidence", or assessed probability that the defendant is guilty) should be fixed in advance

of examining the evidence, so as to avoid subjective influences at variance with equality of justice.

Much of the presentation up to this point has put the emphasis on factors of a subjective and partly irrational character that influence judges or juries in their perception of the value of evidence. However, Myers and Lamm (1976) presented an explanation of the group polarization phenomenon which combines both interpersonal comparison and informational influences. They argue that when an individual, in an attempt to approximate a position congruent with his ideals, presents arguments which tend towards the outer limits of acceptability, he does this not only to present himself to the group more favourably but also to test his ideals. This process, the authors suggest, constitutes a cognitive learning experience both for the discussant and the listeners. The implication of such a view is that relevant information is not irrelevant as the other schools of thought have suggested. Burnstein and Vinokur (1975) advanced a similar argument in suggesting that "a knowledge of other's choices is assumed to lead a person to think of reasons (arguments) others might have had for their choices - reasons which ordinarily would not have come to mind without this knowledge" (p. 412). Both these arguments find support in work which has shown shift to depend upon the proportion of risky to conservative arguments raised by group members in discussion (Silverthorne, 1971; Ebbesen and Bowers 1974; Morgan and Aram, 1975). Kleivan, Fraser and Gouge (1974) also found the proportion of arguments here to be related to shift and they argue rather similarly that "normative group influence seems to be involved in group decisions - the relative importance of informational and normative processes for group decisions may depend on the nature of the problem to be discussed" (p. 178). This suggests that the laboratory simulation of a judicial decision making context may produce a markedly different decision making environment than that of the common risky shift experiment.

METHOD

Aim

The aim of the present study was to investigate the decision making behaviour of individuals and groups in a situation seen as analogous to a judicial decision making one, investigating the relations of this behaviour to the personality and demographic variables mentioned and testing the hypotheses which have been formulated.

Subjects

Ss were 93 evening-course students, 18 to 51 years old, studying at two levels: 48 students taking a course in psychology as part of an adult high-school curriculum (Education level 1 = E.L. 1) and 45 students taking an introductory course in psychology of a university level (E.L. 2); the latter courses being administered by a local organization and were supported by the University of Lund, Sweden.

Participation in the experiment was voluntary and Ss received no money or additional course credit for participation. However, the experiment was carried out as a part of the course schedule and Ss were told that it would give them insight into the use of experimentation in psychology.

Material

The judicial-type material employed consisted of two separate, criminal-type cases, Case A (a car-theft case, see Appendix A) and Case B (burglary of stereo-equipment, see Appendix B), summarized from actual court cases for the purposes of the present study. Both cases were composed of 6 pieces of evidence, each piece consisting of a statement that related to the case in question, printed on a separate card. There was also a practice case consisting of a single piece of evidence.

The statements were printed on white cards 104 x 74 mm in size for Case A and 115 x 74 mm for Case B. The white cards were covered by a red card entitled "Practice", "Car theft" and "Burglary", respectively.

In addition, there were two questionnaires. The rigidity questionnaire, R10R (Rubenowitz, 1963), was a Swedish version of Gogh-Sanford's (1950)

rigidity scale (R-scale). It was designed to measure pedantic habit-stereotype, compulsive preservation and resistance to changes in plans and opinions. The questionnaire was composed of 22 items.

The dogmatism questionnaire, R10D, (Rubenowitz, 1963), was originally constructed by Rokeach (1954) as a dogmatism scale (D-scale).

The scale was intended to measure dogmatic attitudes and included sub-factors such as outgroup aggression, ingroup preference, negative attitude toward life and demagoguery. This questionnaire was composed of 45 items.

Both questionnaires, translated and adapted to Swedish conditions by Rubenowitz (1963, 1970), contained items which were statements or opinions about which the subject was to take a position by underlying one of six comments varying from "Agree completely" to "Have a strongly divergent opinion".

Design

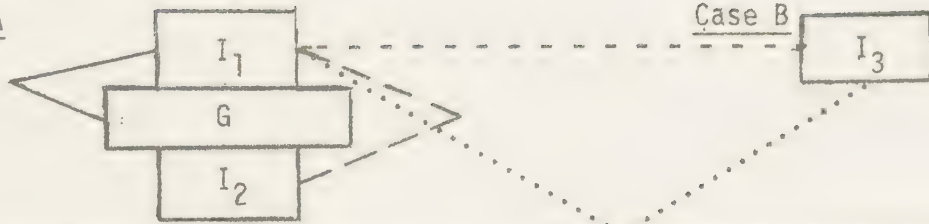
Subjects were run in 31 groups of three, all male or all female. The experiment was carried out in two versions. In version 1, Case A was presented first for individual judgment (I_1), then for group (G) and finally for individual judgment again (I_2). Afterwards, Case B was presented for individual judgment only (I_3).

In version 2, Case B was presented first for individual (I_1), then for group (G) and finally for individual judgment again (I_2). Afterwards, Case A was presented for individual judgment only (I_3).

The resulting design is shown in Figure 1 (p. 47). There were two reasons for using the two versions. First, this made it possible to compare on one and the same case, the individual decision behavior of Ss who knew that group discussion of the case would follow with that of Ss who knew that group discussion of the case was not to follow. Secondly, the use of two cases was seen to increase the generality of the results.

Version 1

Case A



Version 2

Case B



Fig. 1 Design: Comparisons between conditions I_1 , G , I_2 and I_3 .

Key: _____ Within Version: Comparison between I_1 and G
 _____ Within Version: Comparison between I_1 and I_2
 _____ Within Version: Comparison between I_1 and I_3
 Between Versions: Comparison between I_1 , Vers. 1 and I_3 , Vers. 2
 Comparison between I_1 , Vers. 2 and I_3 , Vers. 1

A total of 17 groups were presented with Version 1 and 14 groups with Version 2. The assignment of the groups to either version was determined partly by the course schedule and partly by the effort of the experimenter to present each version to approximately the same number of groups. Since Ss were bound to the regular class schedule, the experiment was run on different days for different Ss. Ss were pledged to maintain secrecy about the content of the experiment, so as not to inform those who had not yet taken part. Those attending a given course session were allowed to choose freely how to divide up into groups of three with the restriction, however, that those in a group should be all male or female. Thus, age distribution within groups was not controlled by the experimenter. The numbers of groups in different categories are shown in Table 1 (on the following page).

Table 1. Numbers of 3-subject groups given
Version 1 and Version 2, respectively

	Sex	Version 1	Version 2	Total
Education	M	2	2	4
Level 1	F	7	5	12
Education	M	3	3	6
Level 2	F	5	4	9
		17	14	31

Procedure

Upon entering the classroom Ss sat as groups of 3 males or 3 females, each subject being provided with a desk and the three desks of a given group being placed so as to form an equilateral triangle. The desks were identified by appropriate cards as K, L, or M, these labels being visible to all the group members. The triangular arrangement prevented any one member from obtaining a more dominant role due to his physical placement relative to the others.

After 10 minutes to allow for late arrivals, the experiment begun. On the desk in front of each S there were the cards, face down; a 4-page instruction booklet; three answer booklets; and two personality questionnaires. The 4-page instructions were divided in four parts entitled "Instructions", "Practice", "Experiment" and "I₃" respectively. The three reply booklets were marked "Practice", "Experiment" and "I₃". S was expected to write name, birth year, sex and the letter assignment (K,L,M) on every answer booklet. The instructions were all read aloud by the experimenter at the same time that the Ss were allowed to read through them silently.

The general instructions were as follows:

"Instructions"

"Statistics show that the crime rate increases every year. Crime often leads to human tragedies and economic loss for the individual. Besides, crime is a threat against the personal security of the public.

It is society's task to fight crime and to sentence the guilty. Judging an accused person means, however, a great

responsibility that an innocent person not be convicted.

Suppose that you are a judge who has to judge a defendant in court. We are presenting you here with evidence taken from a trial and we shall request you to give us your opinion on it. The material is divided into several pieces of evidence and we are going to present you one at a time.

Your task is to read through each piece of evidence carefully and to answer questions afterwards. When you answer the questions, think about the responsibility that a judge should experience on such occasions.

In front of you there is a card with a letter on it. This letter is your identification for the others in the group. Do not forget to write your name, your year of birth and your identification letter on the answer book."

To make the S familiar with the task, the practice task was administered. It consisted of one piece of evidence and the S's task was to read through it and on the basis of this evidence (1) to mark how probable he or she thought it to be that the accused was guilty (subjective probability, S.P., of guilt), (2) to decide whether the accused should be considered guilty or innocent (decision, D), and (3) to mark how confident he or she felt in the correctness of this decision (confidence level, C.L.). This was done first individually (I_1), then after group discussion to consensus (G) and again individually (I_2).

The instructions for the practice task were as follows:

"Practice"

"To make you familiar with the main task we begin with a practice one. On the red card in front of you is written "Practice". Under this card there is card No. 1, on which the first piece of evidence is presented. Read through it carefully and answer the questions on the reply booklet marked "Exercise".

First answer the questions that are written on the two pages, which are marked 1:I₁. Then you are to evaluate the same evidence again together with the other two participants in your group and are to reach agreement within the group upon answers to the same questions that you answered yourself. When you have agreed upon an answer, every one of you should write down this answer on the corresponding page which is marked 1:G.

Afterwards read through the same evidence again and once again take a position on it alone. Write your answers here

on the pages which are marked 1:I₂.

You do not have to feel yourself bound to earlier answers, neither to those which you gave yourself nor to those which were arrived at after group discussion. Answer the questions in the manner that best corresponds to your view just now.

The material for the practice task consisted of the following piece of evidence:

"On March 4, 1969, within the railway area, the policeman Johansson captured the factory worker Olsson who was under suspicion of theft of a moped. Olsson charges that Johansson, while capturing him, delivered at least two blows to his head. Johansson is therefore accused of maltreatment."

On the basis of the piece of evidence presented S was asked (1) to state in percentage his or her subjective probability that the accused was guilty (2 a) to decide if the accused was guilty or innocent and (2 b) to indicate in percentage how certain He/she was that the decision was correct.

The text and content of the questions were as follows:

"Question 1

On the basis of the information that you have received thus far, how probable, in percentage, do you consider it to be that the accused is guilty, i.e., that he committed the crime that he is accused of?

Answer this question by marking a cross, on the figure to the right, between the two probabilities which correspond closest to your opinion."

Below this text a scale appeared on which the subject was to place his or her answer. This scale consisted of three vertical columns marked off by two vertical lines. The left column, marked "The probability (in %) that the accused is guilty", contained top to bottom the numbers 100 to 0. The right column, marked "The probability (in %) that the accused is innocent", contained the numbers, again top to bottom 0 to 100. The probabilities in the left and right side columns, respectively, thus were complements of one another. The middle column was to be marked by the subject

with a cross at the appropriate part of the scale. (For purposes of orientation a horizontal line spanning the three columns appeared between the successive numbers on the scale).

"Question 2 a

Suppose that, on the basis of all the information that was presented thus far, you have to find the accused guilty or innocent. Do you find him guilty or innocent?

Answer: I find the accused:..... Guilty
..... Innocent"

"Question 2 b

How certain do you feel that your judgment of the accused (i.e., your answer to the previous question) is correct?

Please answer this question by putting a stroke on the vertical line to the left."

The scale which appeared below this question was a vertical line with markings and percentage designations at 10 % intervals from 100 % at the top to 0 % at the bottom. The statement "certain that my judgment was correct" appeared next to 100 % and the statement "not certain at all that my judgment was correct" next to 0 % (the latter point thus representing the state of complete uncertainty as to whether the judgment was correct).

Questions regarding the task were answered during and after the exercise. Ss turned then to the instructions for the experiment itself (the 3rd page of the instructions), which were as follows:

"Experiment"

"Now begins the real experiment. Observe that as a judge you are facing a dilemma. On the one hand you must protect society from crime and endeavour to convict the guilty. On the other hand you must protect the rights of the accused and be on your guard not to convict an innocent person. Your answers shall express your subjective opinion of whether the accused is guilty. They shall of course depend upon the content of the evidence. There are essentially two risks in judging: (1) If you, for instance, state a lower probability than is justified from the evidence, that the accused is guilty, there is a risk that a guilty person will be found innocent. (2) If you give a higher

probability than is justified by the evidence, that the accused is guilty, there is a risk than an innocent person will be convicted. Both risks still exist if you give an estimate of the probability that the accused is guilty which equals or nearly equals the probability that the accused is innocent.

Similar risks exist also in answering the other questions, which is why these aspects should be considered while answering them also.

On the red card which lies in front of you is written "Car-Theft". Beneath this card lies Card No. 1, on which the first piece of evidence is presented. Read through it carefully and answer the question on the reply-booklet marked "Experiment". First answer the question on the two pages, which are marked 1:I₁. Then, together with the other participants in the group, evaluate the evidence (Card No. 1) again and agree upon a common answer on the same questions that you have answered by yourself. After having agreed upon an answer, each of you should write this answer on pages which are marked 1:G.

Afterwards read the same evidence once again and give your own individual opinion on it again. Write your answer on the pages which are marked 1:I₂.

You do not have to feel bound to your earlier answers, neither to those which you gave yourself nor to those that were arrived at after a group discussion. Answer the questions in the manner that best fits your opinion just now.

After having answered the question read the next piece of evidence (Card No. 2), answer the questions and continue to the next piece of evidence (Card No. 3) and so on.

Imagine that your answers are going to be read by other persons who will make a decision on the basis of your judgment. It is very important, for that reason, that you carefully evaluate the evidence when you answer the questions.

Remember that you are not permitted to go back to earlier answers."

All groups that participated in the experiment at a given time were requested to not start dealing with a new piece of evidence before all the groups had finished the task involving the current piece of evidence. This was done to avoid one group influencing another through finishing earlier with the task as a whole, and to prevent Ss from dealing with a new piece of evidence before

completing the task with the item considered.

After discussing the 6th piece of evidence and giving the common answer to the questions, every S was asked to rank the members of the group, inclusive of S himself (herself), with regard to the degree of influence that each member had had upon the decisions of the group. This was done by writing down the letters identifying the group participants (K, L, M). The instructions for this were as follows.

"Question 3

We want to know who, according to your opinion, had the greatest, the next greatest and the least influence upon the group's common answers to the questions.

Rank here below the three participants in your group with respect to their influence upon the answers of the group. Use the letters (K, L, M) to identify the participants.

Participant... had the greatest influence upon the answers of the group.

Participant... had the next greatest influence upon the answers of the group.

Participant... had the least influence upon the answers of the group."

The instructions for the individual judgment (the 4th page) were as follows:

"I₃"

"Now we present you evidence from another trial and request you to give us your opinion on it. This evidence is also divided in several pieces and we again present you one piece at a time.

Your task is to read each presentation and afterwards answer the questions. When you answer the questions, have in mind the responsibility that a judge ought to experience on such occasions.

On the red card in front of you is written "Burglary". Beneath this card lies Card No. 1, on which the first piece of evidence is presented. Read through it carefully and then answer the questions that are written in the answer booklet marked "I₃". After having answered a question, read through the next piece of evidence (Card No. 2) and so on.

Observe that as a judge you are facing a dilemma. On the one hand you must protect society from crime and sentence the guilty. On the other hand you must protect the accused

and be on guard not to convict an innocent person. Your answers should express your subjective opinion about the accused. They should of course depend upon the content of the evidence.

There are two risks in judging: 1) If you, for instance, state a lower probability than is justified from the evidence, that the accused is guilty, there is a risk that a guilty person will be found innocent. 2) If you give a higher probability than is justified from the evidence, that the accused is guilty, there is a risk that an innocent person will be convicted.

Similar risks exist also in answering the other questions, which is why these aspects should be considered while answering them also.

Imagine that your answers are going to be read by other persons who will make decisions on the basis of your judgment. It is very important for that reason that you carefully evaluate the evidence when you answer the questions."

Following this task the Ss completed the two personality questionnaires, upon which the experiment was finished.

RESULTS AND DISCUSSION

Judgmental and Choice Shift

On the basis of the literature that has been reviewed, the general prediction can be made that a judgmental shift and choice shift will occur between I_1 (the condition in which Ss make their decisions alone, prior to group discussion) and G (the condition in which Ss make decisions in a group after group discussion to consensus), as well as between I_1 (see above) and I_2 (the condition in which Ss decide individually after group decision). According to the diffusion of responsibility theory (Wallach, Kogan and Bem, 1964) the shift should, as already indicated, be a risky one (a shift to higher estimates of the probability that the defendant is guilty and to a greater number of "Guilty" decisions) whereas according to the multiple value theory (Brown, 1965; Stoner, 1968; Pruitt, 1971) the shift should be a cautious one (lower estimates of the probability that the defendant is guilty and fewer "Guilty" decisions).

In table 2 the means of subjects' estimates of the probability that the defendant is guilty (referred to here and on the pages

that follow as the S.P. or subjective probability scores) are shown for I_1 , G, I_2 and I_3 conditions. The results are presented for each of the two versions (1 and 2) separately, as well as for the group as a whole (Total). One should note that for the G condition the n 's listed should be divided by 3, since the scores in question are those of the groups (the members having reached a consensus here, i.e. agreeing upon the estimate to be given or the decision to be made). It should likewise be noted that the case employed for I_1 , G and I_2 in the one version is the same as that used for I_3 in the other, and vice versa (see Design, Fig. 1). Consequently, for any given condition (I_1 , G, I_2 or I_3) a different case is involved with Version 1 than with Version 2.

As can be seen from the table (Table 2), the differences in mean S.P. scores are only slight between I_1 , G and I_2 conditions. Statistical tests (t-tests for correlated means, involving the

TABLE 2

Means of S.P. in I_1 , G, I_2 and I_3 conditions (Version 1 and 2)

Version	I_1	G	I_2	I_3	n
1	60.2	59.7	59.7	56.6	51(17)
2	61.1	60.2	60.5	66.8	42(14)
Total	60.6	59.9	60.1	61.2	93(31)

within-subject differences between I_1 and G and between I_1 and I_2) provided no support for the hypothesized shift phenomenon.

A further comparison relevant to the question of a group-induced shift in S.P. scores is that of a shift between the I_1 condition and the I_3 condition. In the I_3 condition the subject has no specific knowledge of how the other group members evaluate the judicial case material in question. In the I_1 condition, on the other hand, the subject - when considering all but the very first item of evidence - has already learned from other group members how they evaluate the items which have already been presented

in the particular judicial case. Thus, a group-induced shift in S.P. scores from the I_3 to the I_1 condition could be hypothesized. This was tested here by means of two t-tests for uncorrelated means, one of these comparing I_1 of Version 1 with I_3 of Version 2, and the other comparing I_1 of Version 2 with I_3 of Version 1. This meant, for each of the tests, that the mean estimates of a group of subjects who had evaluated the evidence of a judicial case under I_1 conditions were compared with those of a different group of subjects who had evaluated the same evidence under I_3 conditions. Neither test showed significance.

In an effort to examine in greater detail subjects' S.P. estimates, mean S.P. scores (over Ss) were obtained for each item of evidence, this being done for the I_1 , G, I_2 and I_3 conditions separately. The results are shown graphically in Figures 2 a and 2 b (see the following page). Clearly, for each of the two versions, the curves for I_1 , G and I_2 have a closely parallel course, suggesting a lack of group-induced shift there.

On the other hand, a comparison between the I_1 curve for Version 1 and the I_3 curve for Version 2, and between the I_1 curve for Version 2 and the I_3 curve for Version 1, suggests in both cases that the I_3 curve rises more steeply than the corresponding I_1 curve. To test this statistically, the difference in S.P. estimate between item 1 and item 6 (difference: item 6 minus item 1) was obtained for each subject. Two group comparisons being made: I_1 Version 1 versus I_3 Version 2, and I_1 Version 2 versus I_3 Version 1 (for means see Table 2). The group differences revealed were tested by the Mann-Whitney U-test. For the latter comparison (I_1 Version 2 versus I_3 Version 1) the difference was found to be significant ($z = 2.393$, $p < .01$), the difference for the other comparison being in the same direction but not significant.

A check on the validity of this finding was conducted, since the properties of the probability scale are such that a difference of, for example, 20 % near the one or the other end of the probability

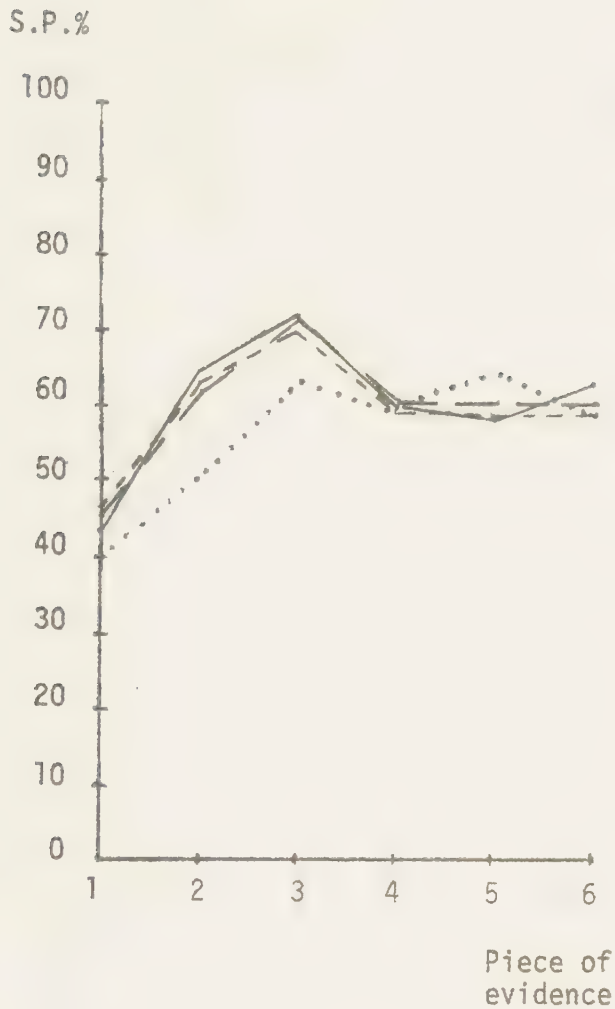


Fig. 2 a. Version 1

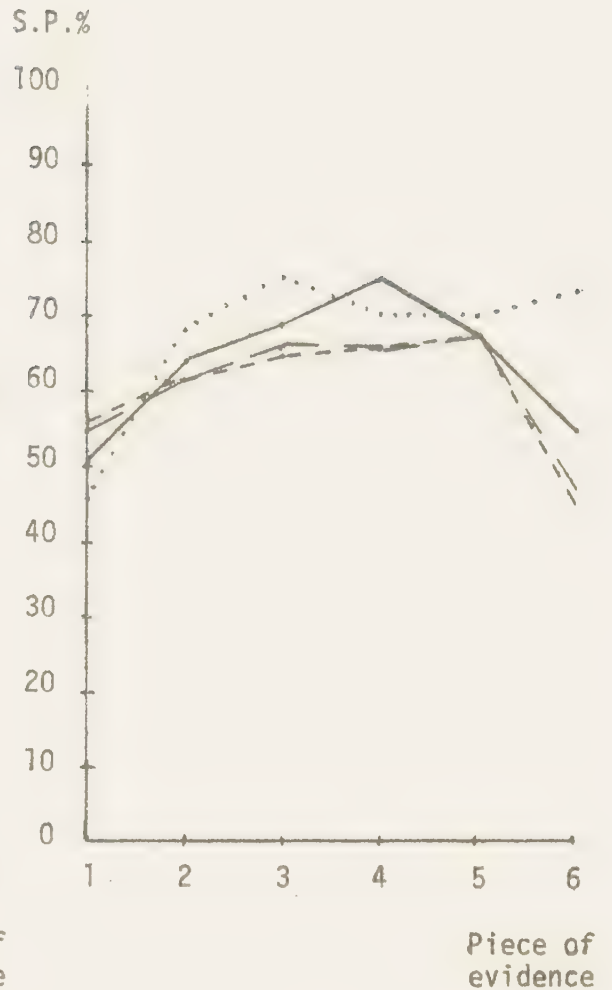


Fig. 2 b. Version 2

Key: ——— I₁ — — — I₂
 - - - - - G I₃

Figs. 2 a and 2 b. The process of decision making: changes in the means of S.P. in I₁, G, I₂ and I₃ conditions after presenting new evidence.

scale cannot be said to represent the same degree of change in belief or opinion as one of 20 % near the middle of the scale. Therefore, each of the difference scores (S.P. for item 6 minus S.P. for item 1) just considered was replaced, by use of Bayes' theorem (cf. Edwards, Lindman and Savage, 1963), with the likelihood ratio of the evidence necessary to convert the S.P. obtained for item 1 to that obtained

for item 6. Performing Mann-Whitney U-tests, parallel to those described above, on these new scores yielded essentially the same results, with still a smaller p-value ($z = 2.602$, $p < .001$) for the comparison which had been found significant using the simple difference scores.

This and the parallel result can be interpreted as a group-induced cautious shift from the I_3 condition (no specific knowledge of how other group members evaluate the judicial case) to the I_1 condition (knowledge of how the other group members have evaluated the items of evidence presented previous to the one just received). This interpretation is in line with the multiple value theory (Brown, 1965; Stoner, 1968; Pruitt, 1971), which predicts a cautious shift to occur through group discussion. It should be noted, however, that the I_3 condition always came later in the experiment than the I_1 condition. Thus, it is possible that the result obtained could be attributable to the subject's greater experience in the I_3 than in the I_1 condition, with tasks of the sort represented here. On the other hand, there is no clear a priori reason for supposing that more experienced Ss here should show a steeper rise in S.P. scores, since caution toward the defendant could be assumed to be as great when Ss are more experienced as when they are less.

The failure to find any risky or cautious shift at all between the I_1 and G conditions, or between the I_1 and I_2 conditions, might possibly be partly explained in terms of a tendency for the S.P. scores of group members to converge on each other after group discussion. Such a tendency toward intra-group conformity would be compatible with the results of studies (see Jones and Garard, 1967, for a review) which have shown groups to become more homogeneous in their views in the course of time. Such a shift toward the mean of the group, it occurring between the I_1 and I_2 condition, should lead to the range of the group members' estimates for a given item of evidence (the largest estimate in the group minus the smallest) being smaller in the I_2 than in the I_1 condition. A comparison

of the number of items of evidence (out of 6) for which the range of the estimates was greater under I_1 than under I_2 conditions, or vice versa, served as the basis for classification here. Whereas for 27 groups the intra-group range of scores was greater for I_1 with greater frequency than for I_2 , there was only one group for which the opposite was the case. (There were 3 groups for which no difference in frequencies was found). Testing difference of 27 to 1 by means of the sign test yields $z = 4.91$, $p < .00001$. Thus, Ss showed a very strong tendency to converge upon the group mean in this individual S.P. estimates made after group discussion. There was no indication that the converging upon the central tendency of the group here became either more frequent or less from the first piece of evidence to the last.

Turning now to the data on the decisions Ss made, Table 3 indicates, for the two versions separately and also for the total group,

TABLE 3

Means frequencies of "Guilty" decisions made in I_1 , G, I_2 and I_3 conditions (Versions 1 and 2)

Version	I_1	G	I_2	I_3	n
1	2.10	2.18	2.12	2.33	51(17)
2	1.64	1.50	1.69	2.45	42(14)
Total	1.89	1.87	1.93	2.38	93(31)

the mean numbers of "Guilty" decisions made (out of 6 which were possible) under the I_1 , G, I_2 and I_3 conditions, respectively. Little difference is evident between the I_1 , G and I_2 conditions, no support for a risky or cautious shift being provided in this respect. A similar impression is gained when one considers (see Figures 3 a and 3 b, for Versions 1 and 2 respectively) the percentage of "Guilty" decisions made for each item of evidence.

Examining these data in greater detail involved first comparing the group decision (G) with the I_1 decisions of the three members

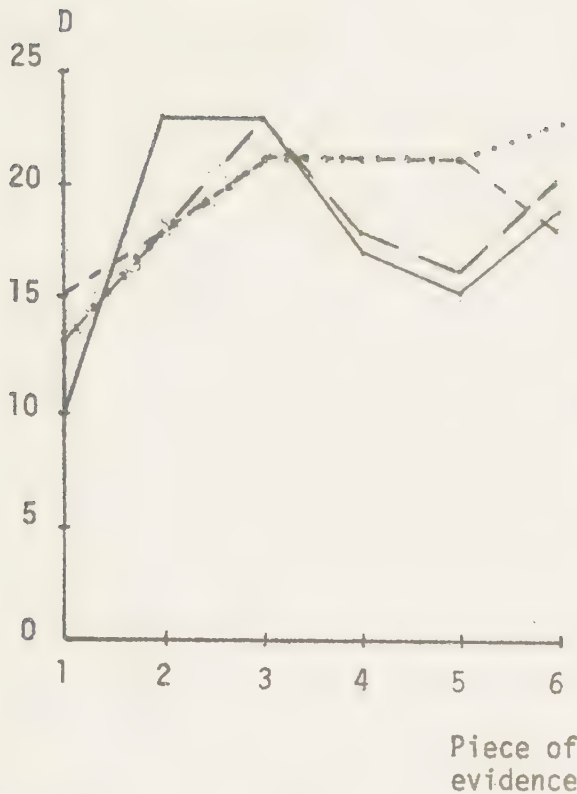


Fig. 3 a. Version 1

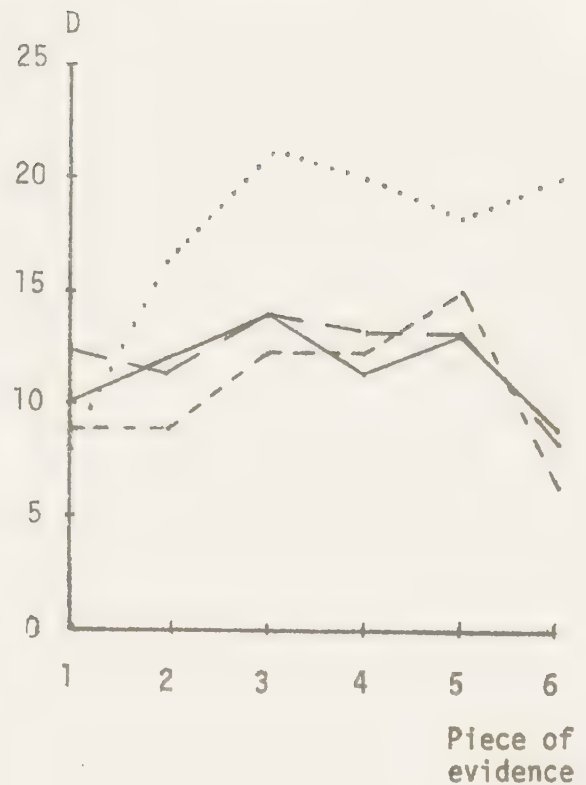


Fig. 3 b. Version 2

Key: — I₁ — — I₂
 - - - G I₃

Figs. 3 a and 3 b. The process of decision making: changes in the sums of "Guilty" decisions (D) made in I₁, G, I₂ and I₃ conditions after presenting new evidence.

of each group. A clear case of risky shift could be said to occur if all three members of a group decided "Innocent" in I₁ whereas the group decision (G) was "Guilty". Similarly, a clear case of cautious shift could be identified if all three members decided "Guilty" in I₁ whereas the group as a whole (G) decided "Innocent". In fact, neither of these two possibilities occurred in any group for any item of evidence. At the same time, a risky shift might still be said to occur if two group members decided for "Innocent" and one member for "Guilty" in I₁ but the group as a whole (G) decided for "Guilty". Similarly, a cautious shift might be said to occur if two members decided for "Guilty" and one member for "Innocent" in I₁ whereas the group (G) decided for "Innocent". Both

events of this type did occur, 10 cases of the former (representing risky shift) and 2 of the latter (representing cautious shift). 10 cases of identified as risky shift occurred in a total of 5 groups and the 2 cases of cautious shift in 1 group. This difference of 5 to 1 in favour of a risky shift here, although demonstrating that a risky shift of sorts can occur, does not achieve significance (binomial test) and can, thus, not be interpreted as any general tendency toward risky shift.

Examining Table 3 and Figures 3 a and 3 b again, one can note that "Guilty" decisions were made somewhat more frequently in I_3 than in any of the other conditions. If significant, this difference would suggest that a cautious shift can occur between such a condition as in I_3 , where there is no group discussion or expectation of it, to such conditions as in I_1 , G , I_2 , where Ss have discussed either the item of evidence at hand or any items preceding it with other group members. Comparing I_1 or I_2 of Version 1 with I_3 of Version 2, and I_1 or I_2 of Version 2 with I_3 of Version 1, in a manner similar to that employed in considering the S.P. scores, did not yield significance (χ^2). An alternative approach, involving within-subject comparisons of frequency of "Guilty" decisions in I_2 as compared with I_3 , tested for the group of subjects as a whole, does yield significance (28 Ss giving "Guilty" decisions more frequently in I_3 than in I_2 and 14 Ss vice versa, which with the sign test yields $p = .045$). However, the occurrence of a cautious shift between I_3 (individual decision with no specific information of how other group members evaluate the case) and I_2 (individual decision following group discussion), which this finding suggests, should be viewed with caution. The major reason for this is that the comparison is not well balanced out, since the one judicial case is given to 51 of the Ss in the I_1 condition and to the other 42 Ss in the I_3 condition, whereas the other judicial case is given to 42 Ss in the I_1 condition and to the other 51 in the I_3 condition. Therefore, the result should simply be taken to suggest that further work might provide support for a cautious group-induced decision shift of the sort in question.

As with the S.P. scores, the question was also examined of whether subjects' decisions tended to converge upon the decisions of other

group members in the I_2 condition (where Ss were already informed, through group discussion, of how the other group members had decided or tended to decide) as compared with the I_1 condition (where Ss were not yet informed of the other members' decisions made following the latest piece of evidence). A rough test of such a tendency was provided by determining how many groups fitted into each of the following two categories. In one of these categories belonged groups in which each member showed the same number of "Guilty" decisions as the other two members in the I_2 condition but not in the I_1 condition (this would indicate a convergence of the group members' decisions in the I_2 condition). In the other category belonged groups in which, in contrast, each member showed the same number of "Guilty" decisions as the other two members in the I_1 but not in the I_2 condition (this would indicate a divergence of group members' decisions in the I_2 condition). Whereas there were 10 groups of the former type, there was only one group of the latter. For testing this difference in frequency statistically, the binomial test was employed. The simplifying assumption was made, in using this test, that the expected occurrence of homogeneity (i.e., of the decisions of all three members agreeing) under the null-hypothesis was the same for the I_1 and I_2 conditions (this assumption was seen to provide a reasonable approximation since, for the 93 subjects as a group, the frequency of "Guilty" decisions was 176 in I_1 and 179 in I_2). The binomial test thus carried out yielded $p = .012$. Therefore, Ss' individual decisions appear to converge upon those of other group members following discussion to group consensus.

Another possible approach to the question of homogeneity versus heterogeneity of the decisions within a group involves a comparison of the first and last items of evidence in terms of group homogeneity. This approach is used in considering I_1 decisions. Those decisions might at first be thought to be free of group influence. However, as has already been suggested, discussion of a case with other group members in the G condition may lead the members of a group, even in the I_1 condition, to converge upon each other in the judgments and decisions they make. This might be expected to occur, since those items of evidence in the case at hand which have already been evaluated and discussed in the group are obviously relevant to the continuing

question of the defendant's guilt, and since knowing how other group members evaluated that evidence would also allow a subject to predict how they would evaluate new evidence. Therefore, one could hypothesize that under I_1 conditions the relative frequency of groups that were homogeneous in their decisions (all three members reaching the same decision) would be less with the first piece of evidence than with the last (i.e., the 6th piece of evidence).

Testing this hypothesis requires that one take account of the frequency of homogeneous and heterogeneous groups, respectively, to be expected on the basis of chance. This in turn depends upon the number of "Guilty" (or "Innocent") decisions which the Ss as a whole (the 93 persons) make when considering the item of evidence in question. Since, from a statistical standpoint, the occurrence of homogeneous or heterogeneous groups by chance can be seen as a case of sampling without replacement, the hypergeometric distribution (see, e.g., Hays, 1973) provides the theoretical model here. The frequencies to be expected by chance, as thus obtained, can be compared with the empirically obtained frequencies of homogeneous and heterogeneous groups.

TABLE 4 a

Percentages of expected (by chance) and actual distribution of Ss in homogeneous and heterogeneous groups in respect to the first decision (item 1) made in I_1 condition

	Homog. "Innocent"	Homog. "Guilty"	Heterog.	Total
n (groups)	18	1	12	31
Expected percentage (by chance)	47.93	0.88	51.98	100
Actual percentage	58.06	3.23	38.71	100

The results for the first item of evidence in I_1 are shown in Table 4 a and those for the sixth (last) item in Table 4 b. (p. 64). Although the probability of obtaining on the basis of chance the distribution of homogeneous "Innocent", homogeneous "Guilty" and heterogeneous groups actually obtained could be calculated, this is not done here since the results as they stand provide strong support for the

TABLE 4 b

Percentage of expected (by chance) and actual distribution of Ss in homogeneous and heterogeneous groups in respect to the final decision (item 6) made in I₁ condition

	Homog. "Innocent"	Homog. "Guilty"	Heterog.	Total
n (groups)	17	7	7	31
Expected percentage (by chance)	33.66	2.25	64.09	100
Actual percentage	54.84	22.58	22.58	100

hypothesis. For item 1 the frequencies actually obtained conform quite closely (if one bear in mind the sampling error which any particular sample of 31 groups might involve) with those to be expected on the basis of chance, suggesting that no appreciable tendency was present for Ss to form groups composed of members who from the very start were similar in their manner of dealing with the evidence. For item 6, on the other hand, the frequency of homogeneous groups is considerably greater than would be expected on the basis of chance. This can be viewed as being the result of group discussion having taken place.

Another question concerning Ss' decisions is how their giving of "Guilty" and of "Innocent" decisions relates to their S.P. and confidence scores. (In the pages that follow, the latter will be referred to as C.L. scores, the abbreviation standing for "confidence level", i.e. the degree of confidence the subject placed in the correctness of his decision). Clearly, one would expect that S.P. scores would tend to be higher for "Guilty" than for "Innocent" decisions. This is because Ss can be thought to employ a decision criterion expressible in terms of some particular assessed probability that the defendant is guilty, any S.P. estimate above this criterion leading to a "Guilty" decision and any S.P. estimate below it leading to an "Innocent" decision. There is, in contrast, no very clear theoretical reason for assuming the one type of decision or the other to be associated with higher C.L. scores. In an actual judicial situation, to be sure, one might hope that the evidence against those defendants who are convicted would tend

to be so compelling that confidence in the correctness of such decisions would be very high. However, the "point of evidence" (as Bolding, 1960, refers to the assessment made of the evidence as a whole, presumably expressible as a point on the scale of probability that the defendant is guilty) may lie anywhere on the probability scale in a given case.

The means of Ss' S.P. and C.L. scores for "Guilty" and "Innocent" decisions, respectively, are shown in Table 5. The hypothesis that S.P. scores should be higher for "Guilty" decisions than for "Innocent"

TABLE 5

Means of S.P. and C.L. given by Ss deciding "Innocent" or "Guilty" as a final decision in I_1 condition

Mean	Ss decided "Innocent"	Ss decided "Guilty"	t
S.P.	55.6	72.4	- 6.697 ¹⁾
C.L.	42.2	59.7	- 2.765 ²⁾
n	65	28	

1) $p < .001$

2) $p < .02$

is clearly supported. One can wonder, on the other hand, at what seem to be the relatively low decision criteria which the Ss appear to employ, since "beyond a reasonable doubt" (which is the expression of a decision criterion often taken as the ideal one for criminal cases) could be assumed to be much higher than 72.4 % probability that the defendant is guilty. (One should note that decision criteria are not measured directly here; rather, one can simply say that the decision criteria should generally be lower, and in no case higher than the S.P. estimate made in connection with a "Guilty" decision.) On the one hand, one might suppose that the Ss, who have no experience in judicial decision making, behave differently here than they would if faced with the actual task of making a judicial decision. On the other hand, instructions to the Ss emphasize that the risk of convicting an innocent person should

be avoided.

Concerning the C.L. scores, it can be seen from Table 5 that these are significantly higher for "Guilty" than for "Innocent" decisions. Although this difference may be specific to the particular decision material employed, it is also possible that it can be partly explained in terms of dissonance theory (Festinger, 1954, 1964). As a basis for this, it can be assumed that a decision of "Guilty" represents a greater commitment on the part of the subject than one of "Innocent". As Gerard (1968) suggests, commitment to a decision may generate cognitive dissonance. One way of reducing this dissonance might be to raise one's confidence level above the level it would otherwise have.

At the same time, it should be noted that the C.L. which Ss show generally is fairly low, the mean for the "Innocent" decisions being only 42.2 %. One basis for interpreting this is to assume - as is done in the "fall-back" hypothesis which will be later described - that many Ss, in making a decision of "Innocent", nevertheless experience a strong need of avoiding decision. Avoiding a decision might be motivated by the expectation that additional evidence should or will follow, or by the perceived ambiguity or incompleteness of the evidence received. In fact, the case material employed was very incomplete and rather ambiguous, since it was felt, in designing the material, that letting the choice of "Guilty" be too easy a one to make would be disadvantageous for studying the phenomena of interest. Avoiding a decision is prevented, however, by the instructions given the S, which require him to make a decision after each item of evidence. Therefore, a decision of "Innocent" here might readily produce a state of cognitive dissonance, although for different reasons than a decision of "Guilty" has been assumed to do.

Dissonance in this case could be expected to lead to a lowering of confidence, since making a decision one was forced to make could be thought to be less dissonance-arousing if one's confidence in it is low than if one's confidence is high. This would be a possible interpretation of the low C.L. scores associated with the "Innocent" decisions.

Another dissonance-producing aspect of "Innocent" decisions here, and one not directly linked with the forced nature of the choice, is the fact that a discrepancy may be found between belief on the one hand and decision on the other. It can be seen in Table 5 that the mean of the S.P. scores associated with "Innocent" decisions is 55.6 %. At the same time it can be assumed that the subject believes the defendant to be guilty if the S.P. is adjudged to be greater than 50 %, and believes him to be innocent if the S.P. is assessed as being less than 50 %. Thus, for many "Innocent" decisions, the subject may nevertheless believe the defendant to be guilty. The discrepancy this involves between belief and decision may be dissonance-arousing and lead to a lowering of confidence. This is a matter which decision theory appears to largely have ignored, and one which can be of potential relevance in any decision-making situation in which the decision criterion lies either well above or below the 50 % mark on the probability scale.

For the want of a better name, decisions of this type will be called "fall-back" decisions and the accompanying behaviour "fall-back" behaviour. A "fall-back" decision here represents a decision for "Innocent" accompanied by no more than a moderate S.P. estimate (higher than 50 % but lower than the criterion) and by a relatively low C.L..

In Table 6 the total numbers of "Guilty" and "Innocent" decisions which the Ss gave are indicated. Since under all four conditions "Innocent"

TABLE 6

Sums of "Innocent" and "Guilty" decisions made in I_1 , G, I_2 and I_3 conditions.

Decision	I_1	G	I_2	I_3	Total
"Innocent"	382	405	379	336	1502
"Guilty"	176	153	179	222	730

decisions are made about twice as frequently as "Guilty", "fall-back" decisions can be assumed to be quite frequent under each of the conditions. Such

an assumption receives further support from the fact that, considering the various items of evidence separately, the mean of Ss^+ S.P. estimates is found, under all four conditions, to lie for each item about in the range of 50-70 %. This can be seen in Figures 2 a and 2 b (p. 57).

Returning now to the shift phenomenon, one can suppose that "fall-back" behaviour might partly obliterate a tendency for a risky or a cautious shift to occur, since the "fall-back" in a sense represents no clear decision at all. There are also various aspects of a judicial-type decision making situation which, since they should tend to mitigate against a risky or cautious shift occurring, might make the only limited support which was obtained for a shift here understandable. As already indicated, a shift has been shown (Madaras and Bem, 1968) to be weak or absent when the matter under discussion concerns morality, when it is believed to have a strong effect upon others, and when caution is the norm for the matter in question. Similarly, homogeneous groups have been shown to be less likely to display shift than heterogeneous groups (Vidmar, 1970; Willems and Clark, 1971; Fischer and Bardeny, 1974).

"Fall-back" behaviour, viewed thus-far primarily in terms of the present experiment, may be important as well in a real judicial decision-making situation. Bolding (1960) remarks, for example, that current judicial systems enforce decisions of "Guilty" or "Innocent" on judicial decision makers who might instead be permitted to make judgments involving a probability factor. He suggests that judges and juries are caught between the necessity of making a binary decision and what he feels might be their preference for making a personal probability judgment. Whether Bolding is right in this or not, the "fall-back" type decision can be thought to be common in a judicial context.

Confidence Level

The assumed role of the confidence level in what has been termed here "fall-back" behaviour has just been discussed. A number of other aspects of Ss^+ confidence level are of particular interest also. One of these concerns possible changes in confidence level with a "Guilty" or an "Innocent" decision as the estimated probability of guilt rises or

falls and thus comes closer to or moves farther away from the decision criterion point on the probability scale. As already indicated, confidence in whichever decision is made should be least when the S.P. estimate is at the decision criterion point. Furthermore, it should increase as the S.P. estimate moves upwards from that point (with a "Guilty" decision) or downwards (with an "Innocent" decision).

To test whether this relationship held in the present study, the group decision data, collected under the 6 conditions, were employed. In each group in which all six decisions were those of "Guilty" (6 groups) or all six were of "Innocent" (15 groups) the C.L. scores were correlated (r_s) with the S.P. scores. The same was likewise done, in this case for the data correlated with the five decisions in question, for those groups in which five of the six decisions were of "Guilty" (3 groups) and for those in which five of the decisions were of "Innocent" (1 group). Six additional groups were eliminated from the analysis because of there being less than five decisions in support of "Guilty" or of "Innocent", as the case might be (2 groups), or because of the group giving the same C.L. or S.P. estimate for each of the items of evidence, making correlation coefficients meaningless (4 groups).

In line with what was already said, it was hypothesized that for the groups with the "Guilty" decisions the correlation between S.P. and C.L. would tend to be positive, whereas for those with the "Innocent" decisions the correlation between S.P. and C.L. would tend to be negative. This would support, for the group decision condition, the assumption that confidence tends to rise as the distance between the S.P. estimate and the decision criterion increases. For the groups with the "Guilty" decisions the correlations (r_s) were as follows (arranged in order of size): +1.00, +.98, +.97, +.96, +.89, +.67, +.58, +.55, +.04. For the groups with "Innocent" decisions the correlations were -.83, -.74, -.71, -.43, -.37, -.30, -.23, -.15, -.13, -.13, -.10, -.09, -.03, +.04, +.08, +.79. These results support the hypothesis that for the "Guilty" decisions the correlations tend to be positive ($p = .002$, binomial test) and for the "Innocent" decisions negative ($p = .046$, binomial test). A similar test of this hypothesis could in

principle have been carried out with the individual data also; on the other hand, the proportion of the individual data for which less than 5 decisions of one type ("Guilty" or "Innocent") have been given is considerably higher than with the group data.

Comparing, with the same group data, the absolute values of the correlations for the "Guilty" decisions with those for the "Innocent" indicates the correlations to be higher in absolute terms for the "Guilty" decisions than for the "Innocent" (Mann-Whitney U-test, $Z = 2.58$, $p < .01$). This result can be interpreted as reflecting "fall-back" behaviour. As the "fall-back" hypothesis implies, "Innocent" decisions are often coupled with a desire to avoid decision, whereas Ss can be considered as more committed to "Guilty" decisions. Since behaviour linked with a frustrated motivation toward avoidance could be thought to be more unpredictable than behaviour associated with an attitude of commitment, higher correlations might be expected for "Guilty" decisions here than for "Innocent".

Another aspect of confidence behaviour of interest in the present study is that of the possible increase or decrease of the confidence in a decision as new information is taken into account. As has already been indicated, one might suppose that in a judicial context the frequently conflicting nature of the evidence would serve to counteract any such tendency, as has been reported elsewhere (Irwin, Smith and Mayfield, 1956; Oskamp, 1965; Beach and Wise, 1969; Tversky and Kahneman, 1974), for confidence to increase even with consideration of irrelevant information. In Figures 4 a and 4 b (see the following page) the changes in the mean C.L. of the subjects from one item to the next is shown. There is obviously no general tendency for C.L. to either rise or fall over items. At the same time, the present data provide no adequate test of whether such a tendency is found in a judicial context generally, particularly since no systematic investigation of the different items of evidence has been carried out.

If indeed a judicial situation does differ, in the changes in confidence which it engenders, from those situations in which a general rise in

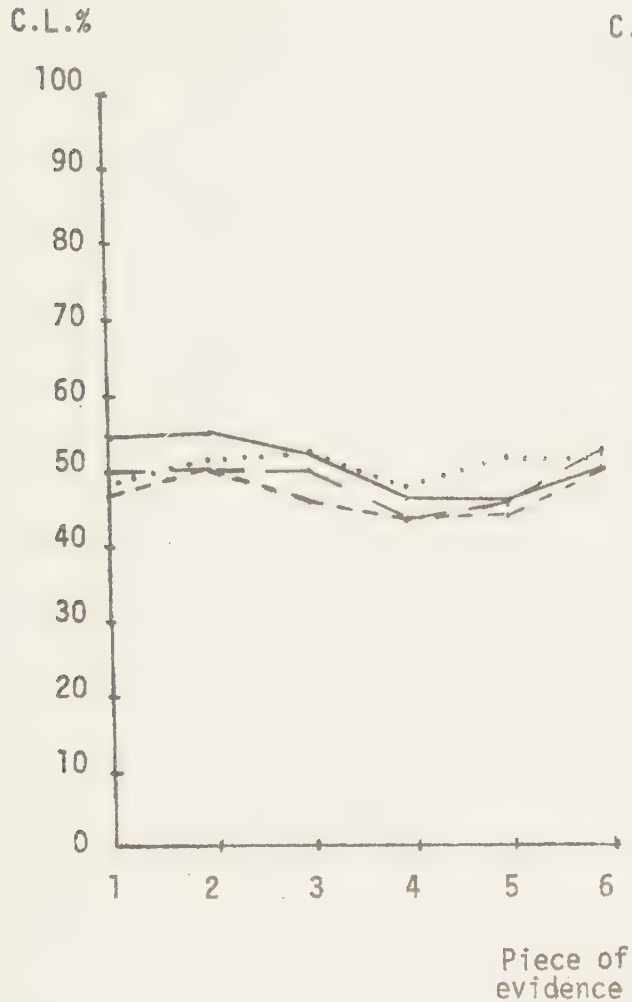


Fig. 4 b. Version 1

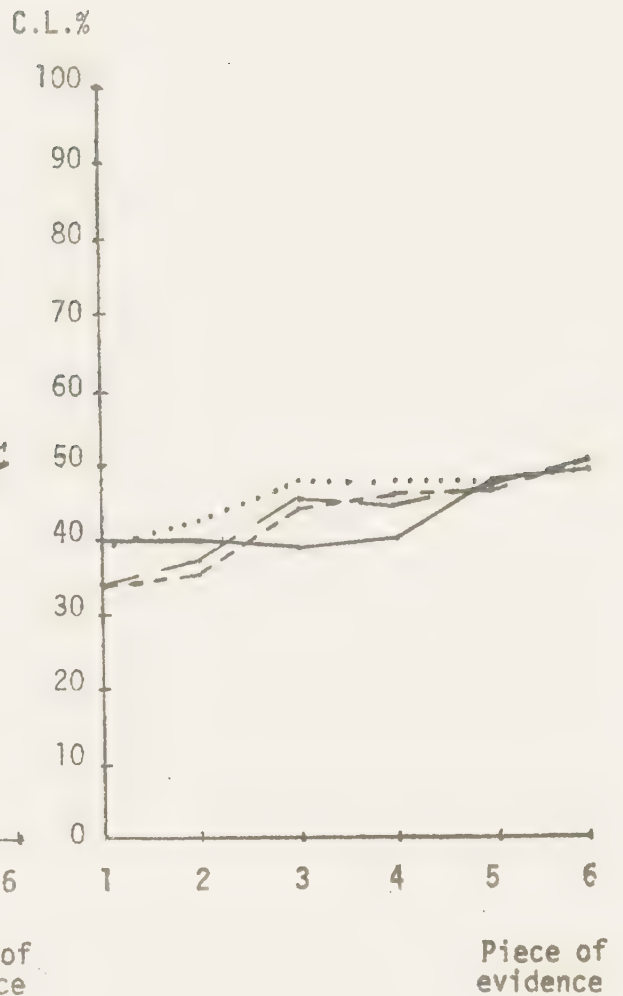


Fig. 4 b. Version 2

Key: — I₁ — — I₂
 - - - G I₃

Figs. 4 a and 4 b. The process of decision making: changes in the means of C.L. in I₁, G, I₂ and I₃ conditions after presentation of new evidence.

confidence with an increase in information has been shown, this would be in line with what the relevant argument theory (Nordhoy, 1962; Vinokur, 1971) could predict. In terms of this theory, the subject might readily regard further evidence as new evidence and not as part of the same body of evidence that had been the basis for any judgment made earlier. In contrast, the commitment theory (Moscovici and

Zavalloni, 1969) says that, in the course of handling information, a person binds himself to his choice and thus commits himself to continue arguing for it. For decisions of "Innocent", at least, the "fall-back" behaviour which has been described would seem opposed to the behaviour which the commitment theory involves, since a "fall-back" decision is a decision without commitment.

Related to the question of commitment is the question of subjects' readiness to change their decisions. Some light may be cast on this by examining the frequency of decision change from one item of evidence to the next. A tendency to become increasingly committed to a decision as evidence piles up would imply a tendency for decision change to become less frequent as more and more items of evidence are presented. This can be examined here by considering, for the 2nd, 3rd, 4th, 5th and 6th item of evidence, respectively, how many Ss changed their decisions. Under the I_1 conditions, the numbers of Ss are, for the respective items of evidence, 20, 11, 13, 4 and 11. Under the I_3 conditions, the corresponding frequencies are 11, 7, 5, 6 and 8. Thus, under I_3 conditions no such tendency is evident. Under I_1 conditions the direction of the differences between items in the frequency of decision change is the same as that which would be expected if Ss became increasingly committed to their decisions. However, any result of this sort obtained under only a limited set of experimental condition should, even if statistically significant, be taken with great caution, since it may be due entirely to the specific items involved. An examination of the group decision data (G condition) provides no support for greater decision change at the start; there, decision change is most frequent on the last item of evidence, although the number of decision changes altogether is too small to make a statistical test of this meaningful.

The question was considered of whether a group-induced shift in C.L. occurred. Means of C.L. over Ss are presented

in Table 7. None of the differences found approach statistical significance. At the same time, here as with the S.P. scores,

TABLE 7
Means of C.L. in I_1 , G, I_2 and I_3 conditions (Version 1 and 2)

Version	I_1	G	I_2	I_3	n
1	2.10	2.18	2.12	2.33	51 (17)
2	1.64	1.50	1.69	2.45	42 (14)
Total	1.89	1.87	1.93	2.38	93 (31)

the possibility that group members' scores converged upon each other in the I_2 as compared with the I_1 condition was investigated. The procedure was the same as employed with the S.P. scores. For each 3-subject group, the range of CL-scores (largest minus smallest score) was determined for each item of evidence for the I_1 and I_2 condition separately. For each 3-subject group the number of items of evidence for which the range of C.L. estimates was greater under I_1 than under I_2 conditions, and vice versa, was determined. Whereas for 26 groups the range was greater for I_1 , more frequently than for I_2 , there were only 3 groups for which the opposite was the case. Using the sign test this yielded $z = 4.08$, $p < .001$. Thus, Ss displayed a strong tendency to converge upon the group mean in their individual C.L. estimates made after group discussion.

Perceived Influence in the Group

As already indicated, each subject ranked himself and the other two members of the decision making group to which he or she belonged in terms of perceived influence within the group. The person whom the subject ranked highest in influence was given rank 1 and the person whom the subject ranked lowest rank 3. The rank sum which each of the three Ss received was then determined, a low rank sum indicating a subject's influence in the group to be perceived as high. Ideally, the subject in each group who had received the highest rank sum might have been designated as the

perceived leader and the other two as perceived followers. However, in some groups there were two persons tied for the highest rank, and in still others all three members received the same rank sum. Thus, for the distinction between leaders and followers there appeared to be no advantage in considering directly what rank sums other members of the group to which a subject belonged had received. Instead a split of the total group of 93 Ss was made such that all Ss with a rank sum of 5 or less (3, 4 or 5) were termed leaders and all those with a rank sum of 6 or more (6, 7, 8 or 9) were termed followers. The split resulted in a group of 36 leaders and of 57 followers, meaning that on the average the 3-person decision making groups consisted of approximately one leader and two followers.

One of the questions to be considered was whether the leaders would tend to respond to the changing nature of the evidence with greater or with less change in their S.P. and C.L. estimates, than the followers. According to the release theory (Pruitt, 1971), a group leader is an individual who displays an opinion which has the effect of releasing the other group members from social restraints which they had assumed to exist. This view might be taken to imply that, particularly under conditions of individual decision making without group discussion, the perceived leader would respond more directly to the changing nature of the evidence place before him than would those perceived as followers, the leader being in this sense more strongly influenced by the facts of the case and comparatively less by social influence.

To test this possibility, a measure was obtained for each subject of the total variation in S.P. scores over the six items of evidence under I_1 conditions, similar measures being obtained for I_2 and I_3 conditions as well. This measure, termed total variation in S.P., was computed as the sum of the absolute differences between successive S.P. scores over the six items. A parallel but less differentiated measure was the number of times, during the series of six S.P. estimates, that the subject changed his estimate from one item to the next. This

TABLE 8 a

Total variation in S.P. and frequencies of S.P. changes under I_1 , I_2 and I_3 conditions for leaders and followers

Mean	I_1			I_2			I_3		
	Lead.	Foll.	t	Lead.	Foll.	t	Lead.	Foll.	t
Variation	58.6	61.0	n.s.	48.3	50.9	n.s.	49.6	49.5	n.s.
Changes	3.08	3.67	-2.080 ¹⁾	3.00	3.47	n.s.	3.28	3.14	n.s.
n	36	57							

¹⁾ $p < .05$

TABLE 8 b

Total variation in C.L. and frequencies of C.L. changes under I_1 , I_2 and I_3 conditions for leaders and followers

Mean	I_1			I_2			I_3		
	Lead.	Foll.	t	Lead.	Foll.	t	Lead.	Foll.	t
Variation	53.3	80.1	-2.148 ¹⁾	42.0	59.1	-1.715 ²⁾	53.0	43.8	n.s.
Changes	3.25	3.70	n.s.	2.94	3.30	n.s.	2.92	3.14	n.s.
n	36	57							

¹⁾ $p < .05$

²⁾ $p < .10$

measure is termed frequency of S.P. change. In addition, similar measures were obtained for C.L. scores (total variation in C.L. and frequency of C.L. change). Means of these measures for leaders and for followers under I_1 , I_2 and I_3 conditions are presented in Tables 8 a and 8 b. As can be seen, the results are just the opposite from what could be predicted on the basis of the release theory. Under I_1 conditions (Table 8 a) the leaders show less frequent change in their S.P. estimates ($p < .05$) and less total variation in their C.L. scores (Table 8 b, $p < .05$) than do the followers.

It therefore appears as if those perceived as having greater influence in the group do not tend to release other group members from their

social restraints. In changing their assessments less often and less markedly, at the same time as they are judged most influential, they can be presumed to have just the opposite effect, that of restraining the other group members somewhat in their tendency to change their estimates. One should bear in mind that two opposing risks are present in a judicial decision making situation: that an innocent defendant will be convicted and that a guilty defendant will be acquitted. Keeping both risks firmly in mind may therefore characterize the leaders more than the followers. Similarly, the leaders may be adopting more of a "wait-and-see" attitude toward current charges in the weight and direction of the evidence, whereas the followers might be considered to lean more toward "premature closure".

Possible differences between the leaders and the followers in the means of their S.P. and C.L. scores, and in their tendency toward a risky or a cautious judgmental shift, were likewise studied. Means of the S.P. and C.L. estimates for the four groups are shown in Table 9. The differences between the leaders and followers here are

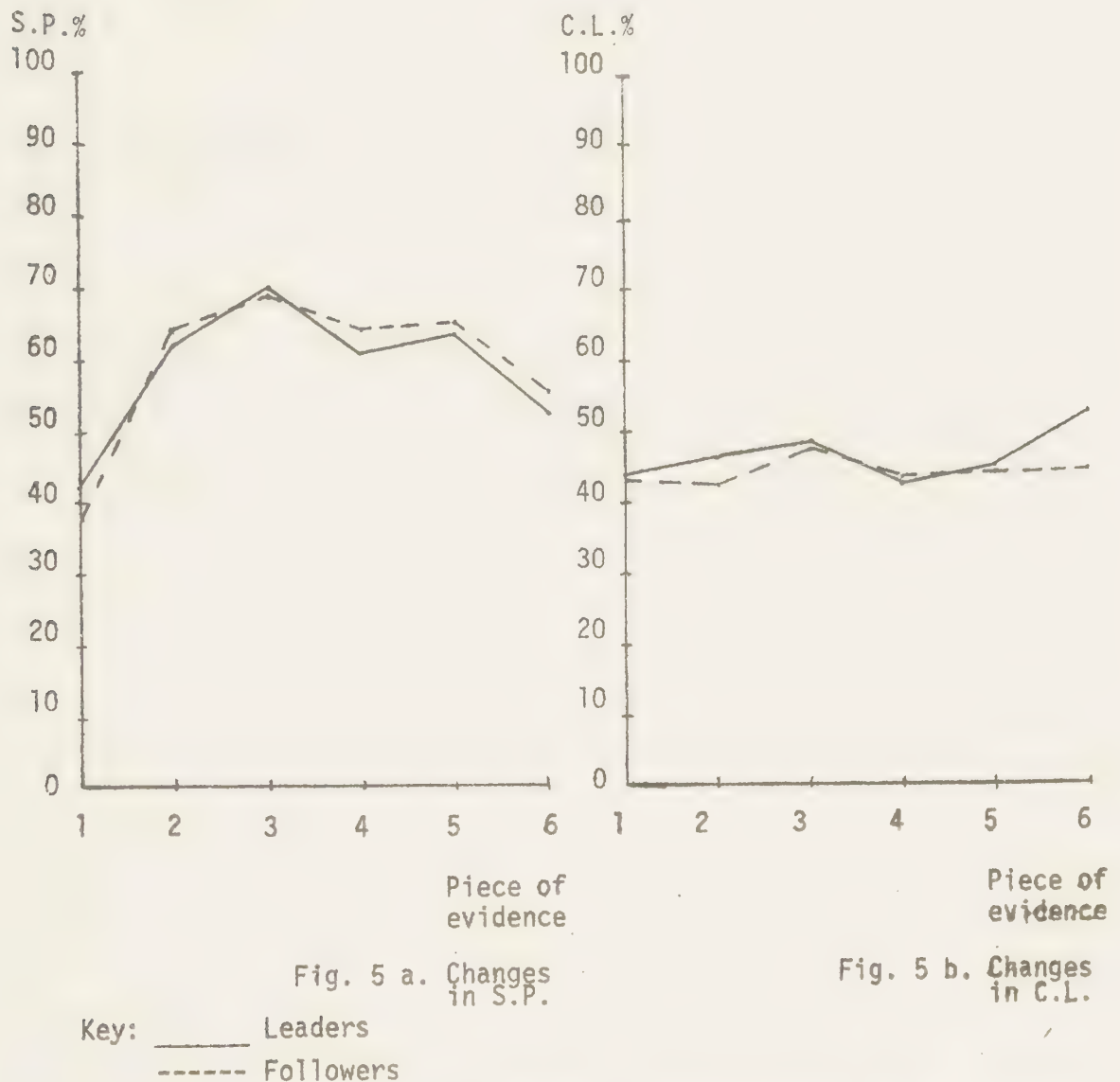
TABLE 9

Means of S.P. and C.L. for leaders and followers in I_1 , I_2 and I_3 conditions

Mean	S.P.		C.L.	
	Leaders	Followers	Leaders	Followers
I_1	59.7	61.3	47.2	47.5
I_2	59.2	60.8	46.7	45.2
I_3	62.6	60.9	52.1	46.7
n	36	57		

slight, none of these approaching statistical significance. Also, t-tests of the differences between the leaders and the followers in their tendency toward a risky or a cautious shift failed to yield significance. Item-to-item changes in S.P. and CL. as new items of evidence were presented were also considered, as shown for the I_2

condition in Figures 5 a och 5 b. No appreciable differences between leaders and followers were found in the curves thus obtained.



Figs. 5 a and 5 b. The process of decision making: changes in the means the leaders' and the followers' S.P. (Table 5 a) and C.L. (Table 5 b) when presenting new evidence in I_2 condition.

Turning now to the decision data, fourfold tables indicating for the I_1 , I_2 and I_3 conditions, the frequency with which leaders and followers gave no decisions of guilty and one or more decisions

of guilty, respectively, are presented in Tables 10 a, 10 b and 10 c. The results indicate that for the I_1 condition the leaders made fewer "Guilty" decisions than the followers ($\chi^2=5.105$, $p<.05$). For the other two conditions (I_1 , and I_3) the difference

TABLES 10 a - 10 c

Frequencies of "Guilty" decisions given by leaders and followers under the conditions I_1 (Table 10 a), I_2 (Table 10 b) and I_3 (Table 10 c)

TABLE 10 a				TABLE 10 b				TABLE 10 c			
Decision "Guilty" Lead Foll				Decision "Guilty" Lead Foll				Decision "Guilty" Lead Foll			
1-6	12	34	46	1-6	10	28	38	1-6	20	32	52
0	24	23	47	0	26	29	55	0	16	25	41
	36	57	93		36	57	93		36	57	93
$\chi^2 = 5.105$				$\chi^2 = 3.324$				$\chi^2 = 0.025$			
$p<.05$				$p<.10$				n.s.			

although not statistically significant, point in the same direction. One should note that caution toward the defendant, in the sense of avoiding the danger of convicting an innocent defendant, is a highly valued ideal in the judicial context. As Bolding (1960) states, "It must be carefully avoided that persons who have not committed any crime shall be found guilty by the courts; it does not matter so much, on the other hand, if it happens sometimes - or even rather often - that persons who are in reality guilty are acquitted" (p. 26). From the results just reported it appears that those viewed as leaders represent these ideals more strongly than those viewed as followers.

Of importance in connection with the decisions made is the question of decision change. To consider whether leaders changed their decisions more frequently than followers, the frequency of decision change was determined for each subject under I_1 , I_2 and I_3

conditions. In the fourfold Tables 11 a, 11 b and 11 c the frequency with which subjects changed their decisions is shown for leaders and for followers under each of the three conditions. As can be seen, the leaders change their decisions less frequently

TABLES 11 a - 11 c

Frequencies of decision changes given by leaders and followers under the conditions I_1 (Table 11 a), I_2 (Table 11 b) and I_3 (Table 11 c)

TABLE 11 a

Decision changes	Lead	Foll	
1-5	7	25	32
0	29	32	61
	36	57	93

$$\chi^2 = 4.796$$

$$p < .05$$

TABLE 11 b

Decision changes	Lead	Foll	
1-5	3	18	21
0	33	39	72
	36	57	93

$$\chi^2 = 5.555$$

$$p < .02$$

TABLE 11 c

Decision changes	Lead	Foll	
1-5	11	22	33
0	25	35	60
	36	57	93

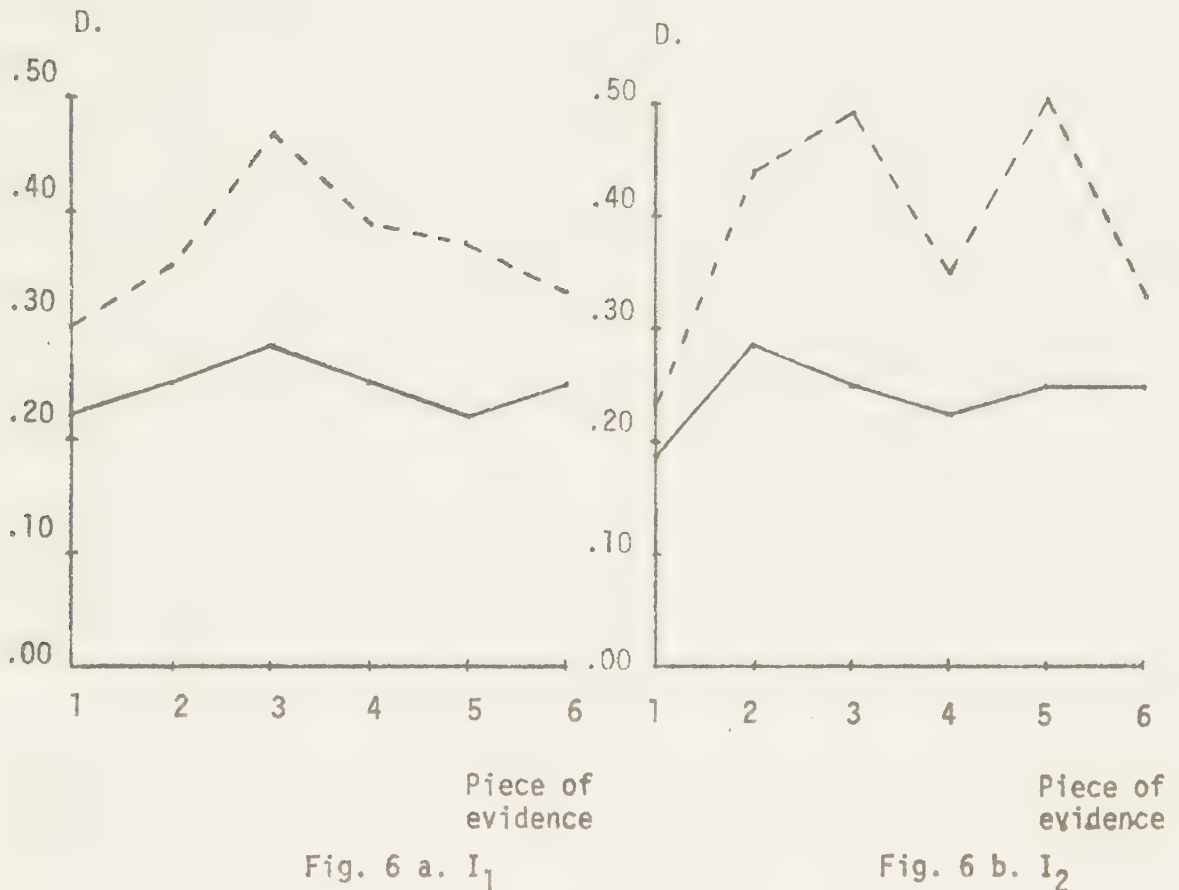
$$\chi^2 = 0.321$$

$$n.s.$$

than the followers, both under I_1 condition ($\chi^2 = 4.796, p < .05$) and I_2 conditions ($\chi^2 = 5.555, p < .02$). The difference for the I_3 condition is in the same direction but fails to achieve statistical significance.

A further aspect of the decisions themselves to be considered are changes in the frequency of "Guilty" decisions from one item of evidence to the next. These are shown for I_1 and I_2 conditions in Figures 6 a and 6 b (see the following page). It appears that under both conditions the leaders as a group change very little from one item of evidence to the next in their tendency to give a "Guilty" decision, whereas the followers, who show a slightly or somewhat higher frequency of "Guilty" decisions at the start, show a marked increase as further items of evidence are presented but then drop closer to the level of the leaders at the end. One can suppose that the leaders perform the function here of "pulling down to earth again" the tendency of the followers to rapidly increase

in their readiness to convict the defendant. One is reminded here of the American film of two decades ago which portrayed a jury



Figs. 6 a and 6 b. The process of decision making: changes in the mean frequencies of D ("Guilty") after presenting new evidence, for leaders and followers, in I_1 and I_2 conditions.

trial in which initially only one jury member was for acquittal and the other eleven members were for conviction, but where at the end these eleven members, who were prove to the influence exerted by the lone dissenter, decided for acquittal also.

The fact that the leaders here change their decisions less frequently, and more often and unchangingly give a decision of "Innocent" than do

the followers, suggests the leaders to employ a higher decision criterion. This again seems more in line with judicial ideals than does the behavior of the followers, since using a high decision criterion (e.g., "guilty beyond a reasonable doubt") represents an ideal of the judicial system. It is possible that the leaders' clearer expression of this ideal, and his clearer example of following it, are effective here in winning the recognition of the other group members - who at least in principle show this ideal as well. In addition, the special function of the leaders in the sort of groups represented here seems to be that of "steady poles" as compared with the more vacillating and changeable behavior of the followers.

It can be asked whether leaders tend to differ from followers in terms of age, rigidity or dogmatism. A comparison of the leaders and followers in this respect is presented in Table 12. Although

TABLE 12

Means of age, rigidity and dogmatism scores of leaders and followers

Mean	Leaders	Followers	t
Age	30.9	28.7	1.217
Rig.	96.6	99.8	-1.084
Dogm.	177.4	186.0	-1.324
n	36	57	

the leaders are slightly older and show slightly lower rigidity and dogmatism scores than the followers, the differences are not significant.

Age and Decision Behaviour

The literature reviewed showed that under a variety of conditions older persons have been found to be less confident, more cautious and less likely to advocate risky decisions than are younger persons (Wallach and Kogan, 1961). Such findings have been confirmed for a

wide variety of conditions (Basowitz and Korchin, 1957; Light, Zax and Gardiner, 1965; Chaubey, 1974).

Results of examining whether these same relationships were present in the situation studied here are presented in Table 13, where means of S.P., decision frequency and C.L. for the I_1 , I_2 and I_3 conditions are shown. As can be seen, none of the differences

TABLE 13

Means of S.P., D. and C.L. for young Ss (below age-median) and old Ss (at/above age-median) in I_1 , I_2 and I_3 conditions

Mean	S.P.		D.		C.L.	
	Young	Old	Young	Old	Young	Old
I_1	58.4	62.8	1.74	2.04	43.2	51.5
I_2	57.6	62.6	1.70	2.15	42.2	49.3
I_3	61.0	62.0	2.36	2.32	46.8	50.5
n	46	47				

are significant (t-test for S.P. and C.L. and χ^2 for decision frequency). However, the older Ss do show somewhat higher (though not significantly higher) S.P. scores for each of the three conditions, also (not shown) when Versions 1 and 2 are considered separately. This made it appear worthwhile to examine the difference in S.P. between older and younger Ss when extreme age groups (upper and lower quartiles) are selected. To this end the age groups 18-22 (23 Ss) and 37-51 (24 Ss) were employed. As is shown in Table 14, the older Ss give

TABLE 14

Means of S.P., D., and C.L. for extreme age groups (top 37-51 years, bottom 18-22 years) in I_1 , I_2 and I_3 conditions

Mean	S.P.			D.			C.L.		
	18-22	37-51	t	18-22	37-51	χ^2	18-22	37-51	t
I_1	57.7	69.1	-3.425 ¹⁾	1.63	2.17	0.194	41.1	51.8	-1.263
I_2	56.8	67.6	-3.162 ¹⁾	1.58	2.08	0.548	40.6	51.5	-1.310
I_3	59.4	63.9	-1.077	2.04	2.25	0.020	44.6	51.6	-0.870
n	23	24							

1) $p < .01$

higher S.P. estimates than the younger Ss under both I_1 ($t = 3.425$, $p < .01$) and I_2 ($t = 3.162$, $p < .01$) conditions.

On the surface, the older Ss' higher S.P. scores would seem to contradict the more usual finding of their being more cautious in their judgments and decisions than younger Ss. However, one should note that the older Ss did not give significantly higher frequency of "Guilty" decisions than the younger Ss. Thus, although giving higher S.P. estimates, the older Ss are apparently also employing a rather high decision criterion. This would counteract the added risk to the defendant which higher S.P. estimates would otherwise produce.

Concerning why the older Ss' S.P. estimates are higher than those of younger Ss, it can be asked whether this is reflective of the tendency which Kogan and Wallach (1961) reported as applying to women only, for judgmental extremity to increase with age under conditions of moderate (as opposed to extreme) confidence. Indeed, approximately 2/3 of the Ss here are women and the Ss as a whole do exhibit only moderate confidence in the decisions they make. However, examining the relations between age and S.P. estimates for the male and female Ss separately (see Table 15) yielded essentially the same

TABLE 15

Comparison between means of S.P. estimates of young (below age-median) males and young females, and between old (at/above age-median) males and old females in I_1 , I_2 and I_3 conditions

Mean	Young		Old	
	Males	Females	Males	Females
I_1	59.4	58.0	60.0	64.3
I_2	57.7	57.6	60.7	63.7
I_3	60.6	61.2	62.3	61.9
n	14	32	16	29

result for both groups. It may be that the relationship previously reported only for women is true for men as well. It is possible that the results obtained here are based on special characteristics of

judicial decision making are that decisions are made for other persons and not for the personal ends of the decision maker himself, that deep moral and social values are often involved, that insight into the behaviour of other people (although of people with whom one has no direct social contact) is called for, and that the evidence upon which the decisions are based is frequently complex and ambiguous.

It is possible that the older Ss, possessing as they do greater experience in life generally, feel themselves better able to give meaningful probability estimates for the events in question. This might be assumed to lead to their giving more extreme S.P. probability estimates than younger Ss, i.e. to their giving estimates which are farther removed from the midpoint on the probability scale. As will be stressed in a later section, a more extreme estimate may be either higher or lower than one that is less extreme, depending upon whether the estimates in question are above or below the midpoint on the probability scale. In the present study the S.P. estimates tend to be above the midpoint on the scale (cf. Figures 2 a and 2b, p. 57). This would mean a more extreme probability estimate generally being higher than one that was less extreme. Thus, it can be reasoned that since the estimates Ss give are located for the most part above the midpoint on the probability scale, older Ss' tendency to give more extreme responses leads them to give higher S.P. estimates.

It is also possible, that the difference in S.P. estimates is an expression of differences in sub-cultures, the older Ss being more strongly influenced by the attitudes which prevailed before the judicial reforms of the 50's and 60's . It is likewise conceivable that the older Ss feel more threatened by crime and its overtones than the younger Ss. Both of these explanations seem less likely, however, since the older Ss' do not show a greater tendency to give "Guilty" decisions.

A further question concerning the S.P. scores concerns whether the older Ss show a basically different course of change in S.P. as new items of evidence are considered. To study this possibility,

curves indicating the changes in mean S.P. scores occurring from one item of evidence to another for each of the two age groups were examined. As can be seen in Figures 7 a and 7 b, which depicts these relations for the I_2 condition, no marked

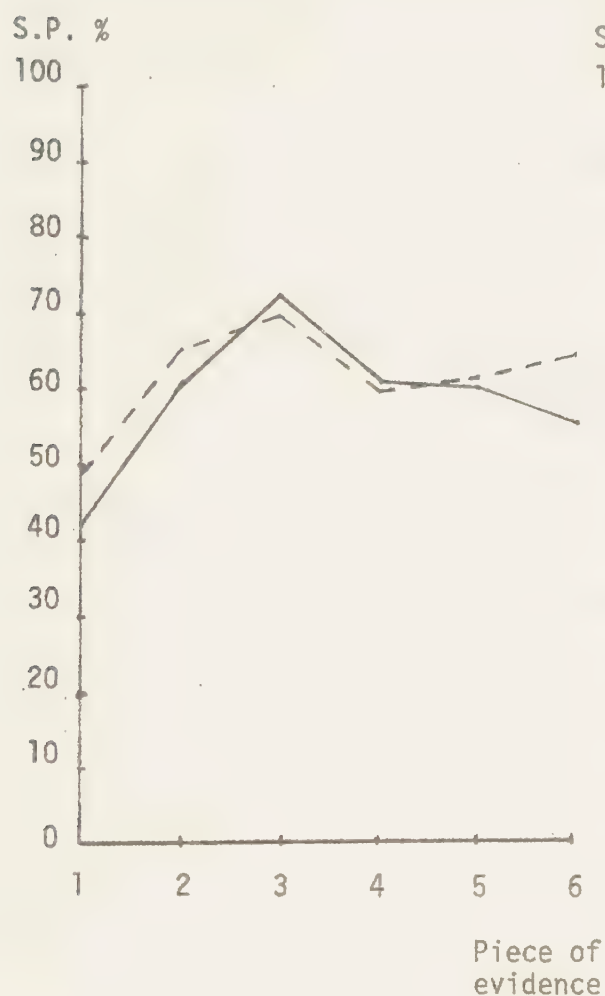


Fig. 7 a. Version 1

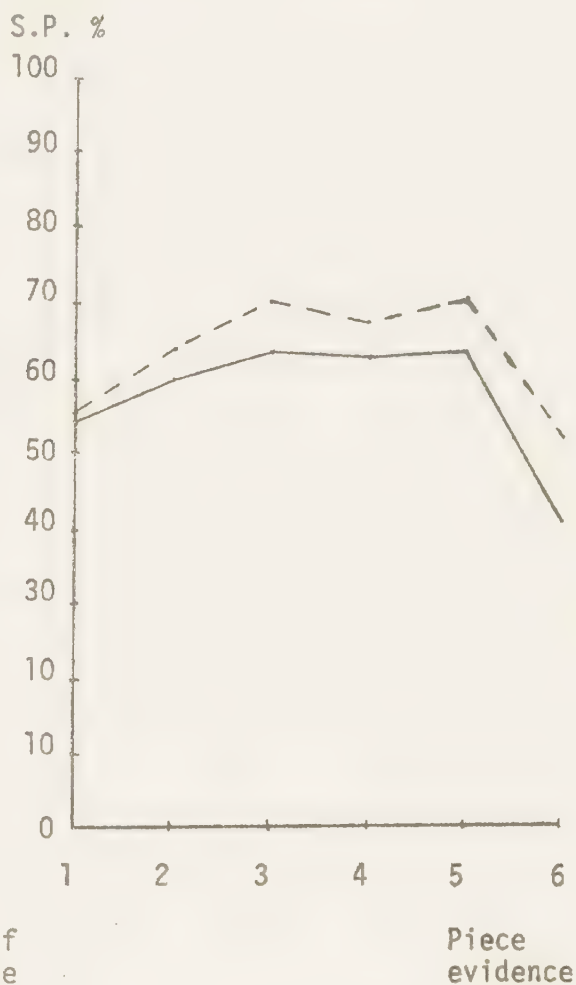


Fig 7 b. Version 2

Key: _____ young
 ----- old

Figs. 7 a and 7 b. The process of decision making: changes in the means of S.P. for young (below age-median) and old (at/above age-median) in I_2 condition.

difference between the two groups is evident. Therefore, older Ss' higher mean S.P. scores do not seem to represent any general tendency for their estimates to rise more steeply as evidence is presented. Rather, the basic level of their S.P. estimates appears simply to be somewhat higher.

Sex and Decision Behaviour

As the literature which has been reviewed shows, a relationship between sex and decision making behaviour, though clearly found, is extremely complex, no parsimonious explanation for all the findings reported being available.

Means of S.P., decision frequency and C.L. scores for the male and female Ss under each of the four conditions is shown in Table 16. The differences between the two groups are relatively small and none achieve statistical significance. A more differentiated approach, on the other hand, is to consider the results for each

TABLE 16

Means of S.P., D. and C.L. for males and females in I_1 , G, I_2 and I_3 conditions

Mean	S.P.		D.		C.L.	
	M	F	M	F	M	F
I_1	59.6	60.3	1.37	2.14	39.9	50.9
G	59.6	60.7	1.30	2.14	41.1	46.2
I_2	59.3	60.5	1.40	2.18	38.5	49.2
I_3	61.4	61.5	2.10	2.53	51.9	47.2
n	30(10)	63(21)				

of the versions of the experiment separately. Means computed in this manner are shown in Table 17 (see the following page). Here quite a different picture emerges. For Version 1, female Ss are found to exhibit higher S.P. scores than males under I_1 and I_2 conditions ($t = 2.187$, $P < .05$; $t = 2.645$, $p < .02$), the direction of the differences being the same for the other two conditions. Paradoxically enough, on the other hand, relationships are just

the opposite for Version 2. There, female Ss display lower S.P. scores than males under I_2 conditions ($t = 2.539$, $p < .02$), the

TABLE 17

Means of S.P., D. and C.L. for males and females in I_1 , G, I_2 and I_3 conditions (Versions 1 and 2)

Version	Mean	S.P.			D			C.L.		
		M	F	t	M	F	χ^2	M	F	t
1	I_1	53.4	61.8	-2.187 ²⁾	1.27	2.44	0.556	49.6	51.2	-0.209
	G	51.5	64.2	-1.476 ¹⁾	0.80	2.75	1.539	43.7	47.6	-0.300
	I_2	51.4	63.2	-2.645 ³⁾	1.07	2.56	1.956	47.9	48.8	-0.115 ³⁾
	I_3	50.5	59.2	-1.887 ³⁾	1.27	2.78	0.921	61.8	46.4	1.811
	n	15(5)	36(12)							
2	I_1	65.8	58.4	1.859 ³⁾	1.47	1.74	0.365	30.1	50.4	-1.923 ³⁾
	G	47.6	56.1	1.681 ¹⁾	1.80	1.33	0.111	38.4	44.4	-1.088
	I_2	67.1	56.8	2.539 ¹⁾	1.73	1.67	0.117	29.0	49.8	-1.671
	I_3	72.3	64.6	1.974	2.93	2.19	1.659	41.9	48.3	-0.645
	n	15(5)	27(9)							

1) $p < .02$ 2) $p < .05$ 3) $p < .10$

direction of the differences in the other three conditions being consistent with this.

The seemingly contradictory results bear out the findings reported and reviewed by Wallach and Kogan (1959), which suggest that sex

differences in judgmental behaviour are highly dependent upon the judgmental material involved, and that such differences may in part be culturally determined. It would appear that a jury composed of inexperienced male jurors might frequently evaluate the evidence in a case differently than a jury composed of inexperienced female jurors. However, no simple generalizations concerning what these differences might be can be drawn. In the present study, no more specific interpretation of the differences obtained between versions 1 and 2 is possible, since there is no way of determining what aspects of the case material involved led to the differences between the two versions in the behaviour obtained.

One should be cautious also in applying the present findings to the behaviour of persons of the two sexes who are judicially experienced. It may well be that experience in court can lead to systematic sex differences in the evaluation of judicial evidence being largely erased, since the acquiring of judicial experience is a socialization process. It should be noted that whereas in American courts, for example, evidence in criminal cases is frequently evaluated by jurors without previous judicial experience, in Swedish courts those evaluating the evidence (judges and lay jurors) are generally experienced. Thus, the implications of this part of the study may partly depend upon the judicial system involved.

Education Level and Decision Behaviour

Although virtually nothing has been done to study the effect of education level upon decision making behaviour, it was suggested that exploring such effects might prove worthwhile. In a judicial context it would seem of importance to have insight into conceivable effects of education level upon the evaluation of evidence by, on the one hand, judges (who are generally trained as lawyers and have thus achieved a high level of education) and, on the other hand, lay judges or jury members (who may or may not have higher education).

The possibility that the relevant argument theory (Nordhoy, 1962; Vinokur, 1971) might have applicability here was explored. One prediction of that theory was that Ss of higher education level would show a greater degree of group-induced shift in their decisions and judgments than would Ss of lower education level. To examine this possibility, means of S.P., decision frequency and C.L. scores for the Ss of lower education level (E.L. 1) were compared with those for the Ss of higher education level (E.L. 2) for each of the four conditions (I_1 , G, I_2 , I_3). The means obtained are shown in Table 18. None of the differences between the groups approached

TABLE 18

Means of S.P., D. and C.L. for E.L. 1 and E.L. 2 Ss in I_1 , G, I_2 and I_3 conditions

Mean	S.P.		D.		C.L.	
	E.L. 1	E.L. 2	E.L. 1	E.L. 2	E.L. 1	E.L. 2
I_1	59.0	62.2	1.54	2.27	45.3	49.6
G	57.9	62.9	1.43	2.40	42.2	46.9
I_2	58.2	62.3	1.44	2.42	45.1	46.6
I_3	59.9	63.3	1.98	2.78	47.1	50.6
n	48(16)	45(15)				

significance. Separate tests of differences between the two education groups in group-induced shift also failed to yield significance.

Considering the results of the two versions of the experiment separately, on the other hand, did reveal certain differences between the educational groups. The means obtained for each of the two versions are shown in Table 19 (see the following page). For Version 1, just as for the total group, the differences between the educational groups are small. However, for Version 2 the S.P. estimates of Ss of E.L. 2 are consistently higher than those of Ss of E.L. 1; this being shown under each of the individual

conditions ($p < .01$ for two of the conditions and $p < .05$ for the other condition, t-test). As one would readily expect in light of these results, E.L. 2 also showed in Version 2 a higher frequency

TABLE 19

Means of S.P., D. and C.L. for E.L.₁ and E.L.₂ Ss in I₁, G, I₂ and I₃ conditions (Versions 1 and 2)

Version	Mean	S.P.			D			C.L.		
		E.L. ₁	E.L. ₂	t	E.L. ₁	E.L. ₂	χ^2	E.L. ₁	E.L. ₂	t
1	I ₁	61.3	59.1	0.513	2.26	1.92	0.035	50.5	51.1	-0.083
	G	60.0	61.0	-0.134	2.44	2.00	0.041	45.4	47.4	-0.181
	I ₂	60.3	59.3	0.184	2.22	2.00	0.199	50.3	46.6	0.525
	I ₃	57.9	55.4	0.523	2.81	1.79	1.716	50.7	51.4	-0.087
	n	27(9)	24(8)							
2	I ₁	56.0	65.7	-2.735 ²⁾	0.62	2.67	2.431	38.6	47.8	-0.904
	G	55.1	65.1	-1.386	0.14	2.85	1.244	38.1	46.3	-0.415
	I ₂	55.4	65.8	-3.252 ²⁾	0.43	2.91	8.679 ²⁾	38.4	46.5	-0.735
	I ₃	62.5	72.3	-2.389 ³⁾	0.91	3.91	11.550 ¹⁾	42.5	49.7	-0.757
	n	21(7)	21(7)							

1) $p < .001$ 2) $p < .01$ 3) $p < .05$

of "Guilty" decisions than E.L. 1; the differences (χ^2) are highly significant for each of the three conditions involving individual decision making. There was no sign here either, however, of differences between the two education levels as regards group-induced shifts.

The fact that consistent differences between Ss of lower educational level and of higher are found in the one version of the experiment but not in the other suggests that, although education level can have an

effect upon the evaluation of judicial evidence, what effect, if any, it has depends upon the nature of the case and of the evidence. Since no rationale can be seen for assuming that those of higher educational level should show a general tendency to assess the probability of a defendant's guilt as higher or to be more ready to consider him as guilty - indeed, one might hope that education would make persons somewhat more cautious in their judgments concerning other persons - it is concluded that the result obtained is specific to the sort of evidence presented.

Another prediction of the relevant arguments theory is that those of higher education level should be more strongly influenced by the facts of the case than are those of lower education level. This could be expected to lead to their responses varying more as they are presented with new items of evidence. More specifically, it can be hypothesized that the number of changes and the degree of total variation in S.P. and C.L. scores should be greater for Ss of higher education level than for those of lower. The results are presented in Table 20 a and 20 b. As can be seen in Table 20 a

TABLE 20 a

Total variation in C.L. and frequencies of C.L. changes under I_1 , I_2 and I_3 conditions for E.L.1 and E.L.2 Ss

Mean	I_1			I_2			I_3		
	E.L.1	E.L.2	t	E.L.1	E.L.2	t	E.L.1	E.L.2	t
Variation	60.2	79.9	-1.603	42.3	63.4	-3.025 ²⁾	48.3	46.4	n.s.
Changes	3.02	4.07	-2.117 ³⁾	2.60	3.76	-3.631 ¹⁾	2.98	3.20	n.s.
n	48	45							

1) $p < .001$ 2) $p < .01$ 3) $p < .05$

this hypothesis is supported for both the number of changes and degree of total variation in C.L. scores under I_2 condition ($t = -3.631$, $p < .001$, resp. $t = -3.025$, $p < .01$) and for the number of changes in I_1 condition ($t = -2.117$, $p < .05$). The hypothesis is supported also regarding the degree of total variation in the

S.P. estimates (Table 20 b) under I_1 condition ($t = 2.065$, $p < .05$), the frequency of changes in S.P. being higher for E.L.₂, though not significantly higher. This provides partial support for the relevant

TABLE 20 b

Total variation in S.P. and frequencies of S.P. changes under I_1 , I_2 and I_3 conditions for E.L.₁ and E.L.₂ Ss.

Mean	I_1			I_2			I_3		
	E.L. ₁	E.L. ₂	t	E.L. ₁	E.L. ₂	t	E.L. ₁	E.L. ₂	t
Variation	51.8	69.2	-2.065 ¹⁾	46.9	53.1	n.s.	52.3	46.6	n.s.
Changes	3.27	3.62	n.s.	3.13	3.47	n.s.	3.10	3.18	n.s.
n	48	45							

¹⁾ $p < .05$

arguments theory here, although other interpretations could be given the results. One such alternative interpretation is that Ss of higher education level possess a greater degree of cognitive differentiation (see, e.g., Schroder, Driver and Streufert, 1967, for a discussion of this dimension) and that this is the basis of their C.L. estimates changing more frequently. The two interpretations, to be sure, are not necessarily in contradiction to one another but may simply emphasize different aspects.

A further question concerns the relative degree of rigidity and dogmatism of persons of lower and of higher education level. Result pertaining to this question are presented in Table 21, which also includes the

TABLE 21

Means of age, rigidity and dogmatism scores for E.L.₁ and E.L.₂ Ss

Mean	E.L. ₁	E.L. ₂	t
Age	28.54	30.60	-1.171
Rig.	99.92	97.00	1.015
Dogm.	193.31	171.56	3.537 ¹⁾
n	48	45	

¹⁾ $p < .001$

variable of age. As can be seen, those of lower education level tend to be more dogmatic ($t = 3.537$, $p < .001$). This provides some indirect support for the interpretation of the results for the frequency of change in C.L. in terms of Ss of higher education level being more differentiated, since according to Rokeach (1960) more dogmatic persons are less differentiated in their belief systems than are less dogmatic persons.

The variable of age is only of interest here as a check on whether those of E.L.₁ were of approximately the same age as those of E.L. 2. If this were not found to be the case, then results obtained with E.L. might be partly interpretable in terms of age difference and vice versa. To examine it more closely, the age means are shown for the two versions of the experiment separately (Table 22). As can be seen, the two education levels are well matched for age in Version 1

TABLE 22

Means of age for E.L.₁ and E.L.₂ Ss (Versions 1 and 2)

Version	E.L. ₁	E.L. ₂	t
1	30.44	30.37	-0.030
2	26.10	30.86	-2.207 ¹⁾
n	48	45	

¹⁾ $p < .05$

whereas in Version 2 Ss of higher education level tend to be older ($p < .05$). This should be born in mind in evaluating results obtained for the two variables, specifically for Version 2.

Rigidity, Dogmatism and Decision Behaviour

There is reason, as has been discussed, to hypothesize that rigid Ss will show less group-induced shift than non-rigids. Werner's (1956) view of rigidity as sluggishness in the variation of response,

in overcoming individual sets and as having a more closed cognitive organization of beliefs and disbeliefs, as well as Fiske and Rice's (1955) claim that rigids tend to show a failure to alter response when faced with changed conditions - all speak for this hypothesis.

The subjects were divided on the basis of their RIOR questionnaire (Rubenowitz, 1963) scores into a group (49 Ss) at/above the median, termed rigids, and a group (44 Ss) below the median, termed non-rigids. In Table 23 the average degree of shift, seen in absolute terms,

TABLE 23

Shift in S.P., D. and C.L. from I_1 to G and to I_2 for rigid and non-rigid Ss

Mean	S.P.		D.		C.L.	
	Rig.	Non-rig.	Rig.	Non-rig.	Rig.	Non-rig.
$I_1 - G$	10.0	7.6	0.67	0.68	13.6	12.9
$I_1 - I_2$	5.0	4.1	0.31	0.30	7.8	7.5
n	49	44				

occurring between I_1 and G conditions, as well as from I_1 to I_2 , is shown for rigids and for non-rigids, the shift considered being that of S.P., of decision and of C.L. scores. For the decision and C.L. scores, differences between the rigids and non-rigids are only slight. For the S.P. scores too, none of the difference achieve significance. However, the direction of differences there for both comparisons is in the opposite direction from that predicted. Thus, these data provide no support for the hypothesis that the rigid Ss should show a lesser degree of shift.

Means of the S.P., "Guilty" decision frequency and C.L. scores for the two versions separately are presented in Table 24 (see the following page). For these scores no definite hypothesis had been

formulated. It can be seen that, for Version 1 only, rigids give higher S.P. estimates than non-rigids under I_1 and I_2 conditions

TABLE 24

Means of S.P., D. and C.L. for rigid and non-rigid Ss in I_1 , I_2 and I_3 conditions (Versions 1 and 2)

Version	Mean	S.P.			D.			C.L.		
		Rig.	Non-rig	t	Rig.	Non-rig.	χ^2	Rig.	Non-rig.	t
1	I_1	65.6	55.0	-2.668 ¹⁾	2.64	1.58	3.316 ³⁾	53.2	48.4	0.677
	I_2	65.7	53.9	-2.923 ¹⁾	2.64	1.62	4.348 ²⁾	50.5	46.5	0.565
	I_3	58.9	54.4	0.950	2.60	2.08	0.927	54.8	47.3	0.900
	n	25	26							
2	I_1	61.5	60.5	0.239	1.21	2.22	1.266	44.1	42.0	0.208
	I_2	60.1	61.0	-0.215	1.21	2.33	0.984	42.7	42.0	0.065
	I_3	68.8	65.4	0.885	2.17	2.83	0.155	45.7	46.4	-0.078
	n	24	18							

1) $p < .01$ 2) $p < .05$ 3) $p < .10$

($p < .01$ in both cases) and higher frequency of "Guilty" decisions, being significant ($p < .05$) in I_2 condition. When the data of the two versions are combined, on the other hand (see Table 25), the difference obtained does not

TABLE 25

Means of S.P., D. and C.L. for rigid and non-rigid Ss in I_1 , I_2 and I_3 conditions

Mean	S.P.		D.		C.L.	
	Rig.	Non-rig.	Rig.	Non-rig.	Rig.	Non-rig.
I_1	63.5	57.3	1.94	1.84	48.7	45.8
I_2	63.0	56.8	1.94	1.91	46.7	44.7
I_3	63.9	58.9	2.39	2.39	50.3	46.9
n	49	44				

achieve significance. Thus, it cannot be concluded that the tendency here is a general one. Rather, it may be specific to the decision material involved. This would imply that the degree of rigidity of a judge may affect how he evaluates evidence, at least in terms of his assessing the probability that the defendant is guilty, but that since the effect depends upon the nature of the evidence, this is difficult to predict.

It is conceivable that the result here can be seen as parallel to Goldsmith's (1967) finding that rigid Ss are more optimistic than non-rigids, since optimism might be expected to make one more ready to give extreme judgments, which might often mean in a judicial context higher estimates of the probability that the defendant is guilty. However, greater optimism might have been thought to also give rigid Ss higher C.L. scores than non-rigids but the difference obtained for these are far from significant. A similar result was obtained by the present author (Pinhassi, 1972) who found no significant differences between the C.L. ratings given by rigid and non-rigid Ss after making judicial type decisions. Therefore, one should be cautious in equating the rigid Ss' higher S.P. scores with their being more optimistic.

Returning to question of whether rigid Ss show signs of changing their assessments less than non-rigids do, data concerning the number of changes in S.P. (Table 26 a) and C.L. (Table 26 b - see the following page)

TABLE 26 a

Total variation in S.P. and frequencies of S.P. changes under I_1 , I_2 and I_3 conditions for rigid and non-rigid Ss

Mean	I_1		I_2		I_3	
	Rig.	Non-rig.	Rig.	Non-rig.	Rig.	Non-rig.
Variation	60.3	60.2	53.4	46.2	46.7	52.6
Changes	3.35	3.53	3.38	3.20	3.10	3.18
n	49	44				

from one item of evidence to the next, as well as of the total variation in these two variables, were examined. Differences between the rigid and non-rigid Ss were small and were not consistent in their direction. Thus, the results as a whole provide no support for

TABLE 26 b

Total variation C.L. and frequencies of C.L. changes under I_1 , I_2 and I_3 conditions for rigid and non-rigid Ss

Mean	I_1		I_2		I_3	
	Rig	Non-rig	Rig.	Non-rig.	Rig.	Non-rig
Variation.	73.5	65.7	51.9	53.2	44.5	50.4
Changes	3.81	3.22	3.08	3.24	3.33	2.82
n	49	44				

for rigid persons exhibiting less change than non-rigids as new evidence is considered, or as communication with other group members occurs.

Regarding the variable of dogmatism, it has been somewhat tentatively suggested that, in terms of diffusion of responsibility theory, dogmatic Ss might be expected to display greater shift than non-dogmatics. The basis for this assumption was the anxiety which dogmatic persons are seen to possess (Rokeach, 1960). This can be thought to give them greater reason to diffuse responsibility. For examining this a median split of the Ss' R10D questionnaire (Rubenowitz, 1963) scores was made, the group at/above the median (48 Ss) being termed dogmatics and the group below the median (45 Ss) being termed non-dogmatics. The results of comparing dogmatics and non-dogmatics in the degree of shift of S.P., decision and C.L. scores from I_1 to G and from I_1 to I_2 conditions, however, revealed no differences of note (Table 27).

TABLE 27

Shift in S.P., D. and C.L. from I_1 to G and to I_2 for dogmatic and non-dogmatic Ss

Mean	S.P.		D.		C.L.	
	Dogm.	Non-dogm.	Dogm.	Non-dogm.	Dogm.	Non-dogm.
$I_1 - G$	9.1	8.6	0.75	0.60	13.3	13.2
$I_1 - I_2$	4.4	4.7	0.29	0.31	7.7	7.6
n	48	45				

Means of S.P. decision and C.L. scores were also compared for the dogmatics and non-dogmatics (Table 27 A). This revealed only small differences between the two groups when results were considered for the experiment as a whole. When the results of

TABLE 27 A

Means of S.P., D. and C.L. for dogmatic and non-dogmatic Ss in I₁, I₂ and I₃ conditions

Mean	S.P.		D.		C.L.	
	Dogm.	Non-dogm.	Dogm.	Non-dogm.	Dogm.	Non-dogm.
I ₁	60.2	61.0	2.12	1.87	50.4	44.0
I ₂	59.6	60.1	2.06	1.78	48.9	42.3
I ₃	59.7	63.3	2.44	2.33	45.5	52.1
n	48	45				

the two versions were considered separately, however, it was found, as shown in Table 28, that for I₁ and I₂ conditions of Version 2 the dogmatic Ss showed lower S.P. scores than the non-dogmatics ($p < .05$ and

TABLE 28

Means of S.P., D. and C.L. for dogmatic and non-dogmatic Ss in I₁, I₂ and I₃ conditions (Versions 1 and 2)

Version	Mean	S.P.			D.			C.L.		
		Dogm.	Non-dogm.	t	Dogm.	Non-dogm.	χ^2	Dogm.	Non-dogm.	t
1	I ₁	62.4	57.4	1.191	2.96	1.04	4.296 ²⁾	54.0	46.8	1.010
	I ₂	62.3	56.6	1.294	3.00	1.04	1.742	51.7	44.5	1.032
	I ₃	56.6	56.7	-0.028	3.00	1.52	1.716	45.1	58.0	-1.528
	n	28	23							
2	I ₁	57.0	64.7	-2.120 ²⁾	0.95	2.73	0.002	45.4	41.1	0.428
	I ₂	55.8	64.8	-2.427 ¹⁾	0.75	2.55	2.016	45.0	40.1	0.463
	I ₃	64.1	70.3	-1.694	1.65	3.18	2.396	46.1	45.9	0.015
	n	20	22							

1) $p < .02$ 2) $p < .05$

$p < .02$, t-test); their frequency of "Guilty" decisions was also lower here but the difference did not achieve significance. In contrast, in Version 1 the dogmatic displayed a higher frequency of "Guilty" decisions than the non-dogmatics ($\chi^2 = 4.296$, $p < .05$).

In the earlier mentioned study of the present author (Pinhassi, 1972) dogmatic Ss were found to express higher confidence in their judicial type decision making tasks than did the non-dogmatic Ss. No significant differences were found, however, in the frequency of their giving "Guilty" or "Innocent" decisions. Comparing the frequencies of the decisions ("Guilty" or "Innocent") made by rigids and non-rigids yielded likewise no significant differences.

Clearly, the effect of dogmatism; like that of rigidity, upon the evaluation of judicial type evidence seems to depend upon the specific evidence involved. The finding of dogmatic Ss' S.P. scores being lower than those of non-dogmatics for one of the versions seems somewhat unexpected since, in general terms, holding an opinion in a dogmatic way would be thought to imply unreasonably high belief in its being true. However, Rokeach and Bonier (1960) emphasize the anxiety of the dogmatic. It is possible that this could lead to a lowering of subjective probability under some conditions and to a raising of it under others.

The total variation in S.P. and the frequency of S.P. changes for dogmatic and non-dogmatic Ss are presented in Table 29 a. Similar

TABLE 29 a

Total variation in S.P. and frequency of S.P. changes under I_1 , I_2 and I_3 conditions for dogmatic and non-dogmatic Ss

Mean	I_1		I_2		I_3	
	Dogm.	Non-dogm.	Dogm.	Non-dogm.	Dogm.	Non-dogm.
Variation	60.1	60.4	49.3	50.5	49.4	49.7
Changes	3.44	3.44	3.25	3.33	3.16	3.13
n	48	45				

measures for C.L. are given in Table 29 b. These tables show that the dogmatic Ss do not differ markedly from non-dogmatic Ss in the degree of the total variation and in the frequency of their S.P. or C.L...

TABLE 29 b

Total variation in C.L. and frequency of C.L. changes under I_1 , I_2 and I_3 conditions for dogmatic and non-dogmatic Ss

Mean	I_1		I_2		I_3	
	Dogm.	Non-dogm.	Dogm.	Non-dogm.	Dogm.	Non-dogm.
Variation	69.2	70.3	53.5	51.4	39.5	55.8
Changes	3.60	3.44	3.29	3.02	3.25	3.91
n	48	45				

Regarding the possible relationship between the variables of rigidity and dogmatism, Rokeach (1954) argues that both dogmatism and rigidity refer to forms of resistance to change, stressing (1958) a positive relationship between them. Parrott(1971) although noting a positive correlation between rigidity and dogmatism, claims dogmatism and rigidity to be loaded on separate factors. In the present investigation, a rank correlation coefficient (r_s) of +.39 was obtained between them. Although this does indicate those high on the one variable to tend to be high on the other, it leaves much room for differences between the two variables.

Relations of both rigidity and dogmatism to age were likewise examined. Means of age for those high and those low on each of the variables are presented in Table 30. As can be seen, older Ss tend

TABLE 30

Comparison between rigids and non-rigids and between dogmatics and non-dogmatics in respect to the means of their age

Mean	Rig.	Non-rig.	t	Dogm.	Non-dogm.	t
Age	31.54	27.40	2.327 ¹⁾	29.15	29.96	-0.469
n	49	44		48	45	

1) $p < .05$

to be more rigid ($p < .05$). No relationship between dogmatism and age is evident here.

Extremity of Judgment

As has been indicated, one could predict on the basis of the release theory (Pruitt, 1971) that a group-induced shift (shift to more extreme estimates) should occur following group discussion, whereas one could predict on the basis of the multiple value theory (Brown, 1965; Stoner, 1968) that an intermediate shift (shift to more intermediate estimates, i.e. to estimates closer to .50 on the probability scale) would occur.

For purposes of clarity it should be noted that the extremity of a S.P. estimate represents the distance, measured in absolute terms, between the estimate in question and the .50 mark on the probability scale. Thus, a S.P. score of .30 possesses an extremity of .20 ($.50 - .30$) and a S.P. score of .90 an extremity of .40 ($.90 - .50$). A shift in the extreme direction, i.e. to a greater extremity, may constitute either a risky or a cautious shift, depending upon where on the probability scale the S.P. estimates are located. For example a shift from a S.P. of .30 (extremity .20) to one of .40 (extremity .10) represents a risky shift, just as a shift from a S.P. of .70 (extremity .20) to one of .60 (extremity .10) represents a cautious shift. Both the shifts just mentioned would be termed intermediate shifts, since they involve a shift from greater extremity (an extremity value of .20) to lesser extremity (an extremity value of .10). Thus, a given degree of extreme or intermediate shift is ambiguous as far as its being risky or cautious is concerned. This is not assumed, on the other hand, to make it meaningless from a psychological standpoint to speak of intermediate and extreme shifts.

Table 31 indicates the means of extremity for each of the two versions

TABLE 31

Means of S.P.-extremity values in I_1 , G, I_2 and I_3 conditions (Versions 1 and 2 and the total group)

Version	I_1	G	I_2	I_3	n
1	18.6	16.5	17.7	17.7	51(17)
2	15.8	15.3	14.5	19.0	42(14)
Total	17.3	16.0	16.3	18.3	93(31)

and for the total experiment, for the I_1 , G, I_2 and I_3 conditions. Clearly, neither an extreme shift nor an intermediate shift appears to have occurred consistently. To test for shift, t-tests for correlated means were carried out (not shown) between the I_1 and G, as well as between the I_1 and I_2 conditions. None of these revealed significance.

One possible reason for lack of an extreme or an intermediate shift could be the ambiguous nature of the items. Moscovici and Zavalloni (1969) found no shift toward extremity to occur for ambiguous items, which they considered as less meaningful than clear-cut positive or negative items. In the present study, to be sure, the pieces of evidence presented could not be regarded as positive or negative to the subject himself. However, they were ambiguous in their nature. This may have tended to prevent extreme judgments from occurring, even after group discussion.

In figures 8 a and 8 b changes in the means of the Ss' extremity scores

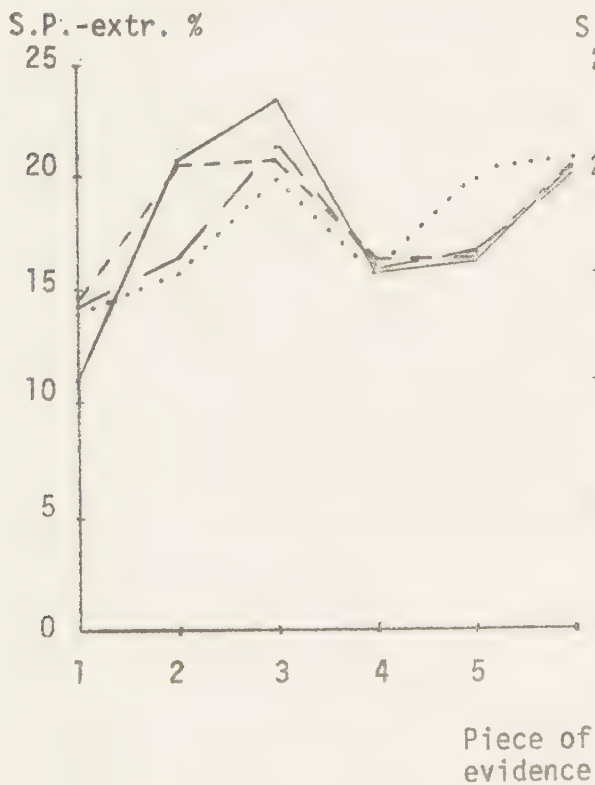


Fig. 8 a. Version 1

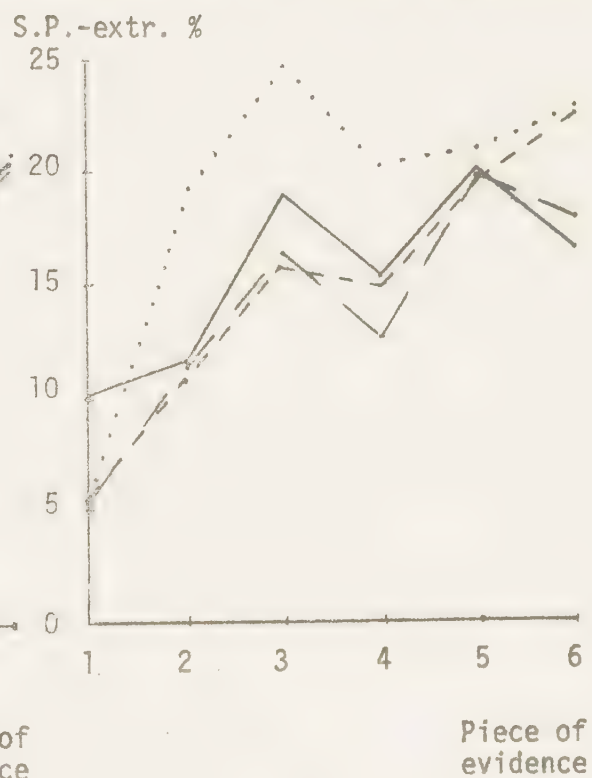


Fig. 8 b. Version 2

Key: I_1 ——— I_2 ———
G - - - - - I_3

Figs. 8 a and 8 b. The process of decision making: changes in the means of S.P.-extremity values after presenting new evidence.

as the one item after the other was presented are shown. Although estimates did tend to become more extreme as added pieces of evidence were considered, they never became, in terms of the average for the group as a whole, particularly extreme. (One should note that, by definition, an extremity score can never exceed .50).

The instructional set which Ss were given - where the experimenter emphasized both the dangers to the defendant associated with too high an estimate of the probability that the defendant is guilty, and the danger of acquitting an actually guilty defendant if such an estimate is too low - may have worked against Ss' possible tendency to give more extreme responses. On the other hand, the instructions did emphasize that both risks still existed if the subject gave an estimate at or close to .50.

Concerning relationships between extremity and the personality and demographic variables, the results tend to reflect some of the findings reported and discussed in the preceding sections. This is not surprising since S.P. scores and S.P. extremity scores are partly redundant. How redundant they are depends upon where on the probability scale the S.P. estimates involved are located. If the estimates in question all lay above the midpoint on the probability scale, or all of them below, both types of scores would express the same thing; this would not be the case, however, if some of the scores lay above and some below the midpoint on the probability scale.

Table 32 compares dogmatic with non-dogmatic Ss in terms of extremity scores. Under I_2 conditions non-dogmatic Ss are found to display greater

TABLE 32

Means of S.P.-extremity values for dogmatic and non-dogmatic Ss in I_1 and I_2 and I_3 conditions

Mean	Dogm.	Non-dogm.	t
I_1	15.2	19.2	-1.865 ²⁾
I_2	12.7	19.2	-3.514 ¹⁾
I_3	16.1	20.8	-1.954 ²⁾
n	48	45	

1) $p < .001$ 2) $p < .10$

extremity than dogmatics ($p < .001$); differences in the same direction ($p < .10$) being found for the other two conditions as well, although these fail to achieve higher significance. Considering the two versions separately (Table 33) indicates differences of this sort to be highly significant for I_1 and I_2 conditions in Version 2 ($p < .02$, $p < .001$).

TABLE 33

Means of S.P.-extremity values for dogmatic and non-dogmatic Ss in I_1 , I_2 and I_3 conditions (Versions 1 and 2)

Mean	Version 1			Version 2		
	Dogm.	Non-dogm.	t	Dogm.	Non-dogm.	t
I_1	19.0	18.2	0.307	11.4	20.1	-2.644 ²⁾
I_2	17.5	17.9	-0.160	7.9	20.5	-5.502 ¹⁾
I_3	15.8	20.1	-1.392	16.4	21.4	-1.323
n	28	23		20	22	

¹⁾ $p < .001$ ²⁾ $p < .02$

These results would appear, on the surface at least, to contradict what one would expect in terms of Rokeach's (1960) conception of what dogmatism represents. Rokeach considers dogmatism to involve, for example, a tendency for differences between the belief and disbelief systems to be accentuated; this would seem to imply greater extremity. Similarly, he claims that dogmatism have a tendency for that which is disbelieved to be rejected; this could be taken to imply that S.P. scores below the midpoint on the scale tend to for the most part, be considerably below the midpoint (i.e. more extreme). Rokeach also describes the dogmatic as possessing a readiness to show belief in a cause; this could be thought to readily lead, under some circumstances, to S.P. probability scores being above the midpoint on the scale being more extreme.

On the other hand, it is conceivable that the particular characteristics of judicial type decision making tasks lead to dogmatics and non-dogmatics behaving differently when performing them than one might otherwise expect. In such tasks there is strong emphasis placed on caution toward the defendant; such an emphasis is also reinforced by the general acceptance of the judicial system as possessing strong authority and of its protecting the rights of the defendant. Although this is accepted generally, it might have a particularly strong appeal to what Rokeach (Op. cit.) terms the dogmatic's belief in authority. Similarly, what Rokeach describes as the dogmatic's defense against inadequacy and fear of the future might lead to the dogmatic's readily identifying with the defendant's fear of the future and his position of possible inadequacy in attempting to convince the court of his innocence. Rokeach also emphasizes the existence of contradictions within the belief system of the dogmatic. A contradiction of sorts to which the dogmatic might be particularly prone is that exemplified by the statement: "I believe the defendant is guilty but I must consider the probability that he is guilty to not be more than moderately high, so as to protect him against possible injustice".

Taken together, these various points suggest that the dogmatic is particularly ready to identify with the interests of the defendant. Since more of the probability estimates that subjects make lie above the midpoint on the probability scale than below, this would tend to lead to dogmatics' S.P. estimates here being less extreme than those of non-dogmatics. Such an interpretation, to be sure, is speculative and the matter requires further study.

In Table 34 the extremity scores of rigids and non-rigids are compared. Although none of the differences are significant, all three

TABLE 34

Means of S.P.-extremity values for rigid and non-rigid Ss in I_1 , I_2 and I_3 conditions

Mean	Rig.	Non-rig.	t
I_1	19.1	15.2	1.822
I_2	16.7	15.6	0.671
I_3	18.9	16.2	1.115
n	49	44	

differences (I_1 , I_2 and I_3) are in the direction to be predicted on the basis of results reported in the literature (e.g., Brengelmann, 1960), namely that the rigid Ss are more extreme.

Results of the same comparison, carried out for Versions 1 and 2 separately, are shown in Table 35. As can be seen, the difference is

TABLE 35
Means of S.P.-extremity values for rigid and non-rigid Ss in I_1 , I_2 and I_3 conditions (Versions 1 and 2)

Mean	Version 1			Version 2		
	Rig.	Non-rig.	t	Rig.	Non-rig.	t
I_1	21.8	15.2	2.683 ¹⁾	16.3	15.2	0.306
I_2	18.5	17.0	0.600	14.8	14.2	0.194
I_3	17.3	15.3	0.645	20.5	17.0	0.906
n	25	26		24	18	

¹⁾ $p < .01$

significant for I_1 in Version 1 ($t = 2.683$, $p < .02$), supporting here more decisively the assumption that rigid Ss give more extreme S.P. estimates.

A comparison of the extremity of male and female Ss is shown in Table 36. Only the difference under I_1 is significant ($p < .05$) although under all

TABLE 36

Means of S.P.-extremity values for males and females in I_1 , G, I_2 and I_3 conditions

Mean	M	F	t
I_1	20.2	15.6	2.016 ¹⁾
G	18.4	14.5	1.051
I_2	18.6	14.8	1.863 ²⁾
I_3	20.8	17.0	1.479
n	30(10)	63(21)	

¹⁾ $p < .05$

²⁾ $p < .10$

conditions the extremity of the male Ss is greater than that of the females. In Table 37 the differences are shown separately for the two versions. Males are found to be more extreme than

TABLE 37

Means of S.P.-extremity values for males and females in I_1 , G, I_2 and I_3 conditions (Versions 1 and 2)

Mean	Version 1			Version 2		
	M	F	t	M	F	t
I_1	18.6	18.6	0.000	21.8	12.5	2.722 ¹⁾
G	15.5	16.9	-0.286	21.3	12.0	1.634
I_2	17.4	17.9	-0.278	19.8	11.6	2.837 ¹⁾
I_3	16.8	18.1	-0.382	24.7	15.9	2.328 ²⁾
n	15(5)	36(12)		15(5)	27(9)	

¹⁾ $p < .01$ ²⁾ $p < .05$

females under all the three individual conditions of Version 2 ($t = 2.722$, $p < .01$; $t = 2.837$, $p < .01$; $t = 2.328$, $p < .05$).

In Table 38 younger Ss are compared with older. Under the I_1 condition older Ss are found to display more extreme judgments; the results under

TABLE 38

Means of S.P.-extremity values for young (below age median) and old (at/above age median) Ss in I_1 , I_2 and I_3 conditions

Mean	Young	Old	t
I_1	14.8	19.6	-2.275 ¹⁾
I_2	14.2	17.9	-1.958 ²⁾
I_3	16.5	20.2	-1.542
n	46	47	

¹⁾ $p < .05$ ²⁾ $p < .10$

I_2 and I_3 conditions being in the same direction. Examining the two versions separately here (Table 39) shows that a significant difference of this sort obtains for the I_2 condition of Version 1 ($p < .02$). These results support the interpretation given earlier

TABLE 39

Means of S.P.-extremity values for young (below age median) and old (at/above age median) Ss in I_1 , I_2 and I_3 conditions (Versions 1 and 2)

Mean	Version 1			Version 2		
	Young	Old	t	Young	Old	t
I_1	16.2	20.8	-1.769 ²⁾	13.4	18.3	-1.437
I_2	14.0	21.0	-2.414 ¹⁾	14.3	14.8	-0.165
I_3	15.6	19.6	-1.290	17.4	20.7	-0.721
n	24	27		22	20	

¹⁾ $p < .02$ ²⁾ $p < .10$

for the finding that older Ss give higher S.P. estimates than younger Ss.

The results of comparing the mean extremity scores of the two education level groups is shown in Table 40. As can be seen, the S.P.

TABLE 40

Means of S.P.-extremity values for E.L.₁ and E.L.₂ in I_1 , G, I_2 and I_3 conditions

Mean	E.L. ₁	E.L. ₂	t
I_1	13.7	20.9	-3.495 ¹⁾
G	12.9	19.0	-1.810 ²⁾
I_2	12.9	14.5	-0.870
I_3	17.5	19.1	-0.658
n	48(16)	45(15)	

¹⁾ $p < .001$ ²⁾ $p < .10$

extremity of the higher education level Ss tends to be higher for the I_1 condition ($t = 3.495$, $p < .001$). Since no clear rationale can be found for interpreting this finding, it appears possible that it is a function of the specific decision making material employed. When one considers the two versions separately, as seen in Table 41, one notes that for Version 2 those of higher education level show

TABLE 41

Means of S.P.-extremity values for E.L.1 and E.L.2 in I_1 , G, I_2 and I_3 conditions (Versions 1 and 2)

Mean	Version 1			Version 2		
	E.L.1	E.L.2	t	E.L.1	E.L.2	t
I_1	17.3	20.1	-1.077	10.1	21.6	-3.734 ¹⁾
G	15.7	17.4	-0.680	10.0	20.6	-2.046 ²⁾
I_2	16.8	18.8	-0.800	8.9	21.1	-4.534 ¹⁾
I_3	20.6	14.5	-2.194 ²⁾	14.4	23.7	-3.924 ¹⁾
n	27(9)	24(8)		21(7)	21(7)	

¹⁾ $p < .001$ ²⁾ $p < .05$

significantly more extreme scores under all the four experiment conditions ($p < .001$ for the individual conditions, $p < .05$ for G). On the other hand, the lower education level shows just the opposite result for the I_3 condition of Version 1, this likewise achieving significance.

Comparing the extremity scores of the leaders with those of the followers (Table 42) as judged on the basis of the within-group

TABLE 42

Means of S.P.-extremity values for leaders and followers in I_1 , I_2 and I_3 condition

Mean	Leaders	Followers	t
I_1	17.3	17.4	-0.045
I_2	16.5	16.1	0.190
I_3	19.1	17.9	0.118

ratings of influence, revealed no consistent differences between the two, all the differences being of small magnitude. These results are consistent with the results of Myers and Murdoch (1972), who found no relationship between the extremity of one's views and the extent to which one dominates the discussion.

CONCLUSIONS

The review presented of literature concerning the group induced shift phenomenon revealed a large number of contradictory results. Shift was found to be risky, conservative or absent, depending on the circumstances and the study in question. Most such studies, as the present one also, were of a laboratory type.

An underlying question considered was what applicability such investigations have to real life, its being noted that many authors of laboratory studies claim their results to be relevant outside the laboratory. The present investigation has made the attempt to construct a situation having some formal resemblance with a real-life situation, that of the judge (or jury member) evaluating evidence and making a decision in a criminal court case. No claim that the conditions of the experiment closely approximate real life is made. The aim has nevertheless been to reproduce some elements of the class of real-life events of interest.

The majority of studies of the group-induced shift phenomenon have been carried out with the aim of establishing or disestablishing the validity of one or more theories developed to account for the shift phenomenon. In the present investigation the basic starting point has been the assumption that most, if not all, of the theories in the area are accurate descriptions of processes that occur under some conditions, within some contexts. It was assumed that a given context may provide fertile ground for various theories which would predict a shift phenomenon to occur. It seemed that at any one occasion, in any single context, there would be a hierarchy of relevant theories to account for the different processes at work.

This led to a strategy of measuring and considering a number of different variables, partly concerning the decision making itself and partly concerning personality and demographic variables relating to the individuals involved. The intention was to approach the question of the decision making behaviour here and possible group-induced shift from different perspectives.

The judicial decision making context appears to have quite special characteristics. Decisions of courts are relatively few in number compared with the decisions made in industrial, educational, military or social professions, for example. Furthermore, decisions of courts are circumscribed by a vast array of unique decision-making or procedural rules embodied in a system of law. Many of the decisions are of great importance to those affected by them, possibly affecting their whole future lives. The importance of the decisions may be considerable not only for the individuals immediately involved but also for society at large. Although the decisions may be reversed upon appeal, they otherwise have a nature of finality. Also, the judicial context is of interest in exemplifying settings in which decisions are of great importance to society.

Concerning the possible occurrence of a group-induced judgmental and choice shift, the diffusion of responsibility theory was seen to predict a risky shift, whereas the multiple value theory was seen to predict a cautious shift. No indication of a general risky or cautious shift - neither in the S.P., the C.L. or the decision scores - was obtained, however, in comparing individual decision making prior to group discussion (I_1) with decision making in the group (G) or decision making following group discussion (I_2). In this sense the results are consistent with Atthowe (1961), Lonergan and McClinfock (1961) and Peterson and Fulcher (1971), who all reported to have found no shift.

A predominant effect here was instead that of intra-group convergence. This was shown for both the S.P. and the C.L. scores through comparing the range of the group members' estimates prior to and

after group discussion. It was also shown for the decision data here that the frequency of homogeneous groups (i.e. of groups where all members gave the same decision under individual conditions) was found to increase, in relation to the number one could expect by chance, after presentation of the last piece of evidence as compared with the first.

Results suggestive of the limited occurrence of a risky or a cautious shift were nevertheless obtained. For example, the occasional occurrence was noted of the three members of a group agreeing under group conditions to a decision which two of them had opposed when making their individual decisions prior to group discussion. Also, there was tentative support for a cautious judgmental shift occurring between individual decision making without expectation of group discussion (I_3) and individual decision making prior to (and with expectation of) group discussion (I_1).

It is conceivable that the design of the experiment contributed somewhat to the failure of a group-induced shift between decision making prior to and following group discussion to be detected. The design involved successively presenting the subjects a series of evidentiary items relating to a given judicial case, and of having subjects deal with each piece of evidence first individually, then in a group, and then individually again, before the next item of evidence was presented. This allowed group influences to affect not only the group decision making behaviour (G) and the individual decision making behaviour after group discussion (I_2) but also, on those items of evidence that followed, the individual decision making behaviour shown prior to group discussion (I_1) - since under I_1 , G and I_2 conditions the same judicial case was involved the whole time. This may have made the detection of a risky or cautious shift difficult, since in comparing I_1 with either G or I_2 , the group influence one obtains in I_1 may be nearly as strong as that in G or I_2 .

At the same time, it seems realistic to assume that in actual judicial decision making body (particularly if these persons have been associated with one another in a judicial capacity for long periods of time, as is frequently the case in Sweden, where the lay judges in the panel are appointed for extended terms) may be able to predict quite well how the other members will evaluate the evidence, even before discussing it with them. This seems analogous to the fact that in the I_1 condition here subjects may have been partly able to predict how other members would evaluate the evidence.

One can doubt, on the other hand, that a sizable risky or cautious shift here, if it did occur, would be totally obliterated by the design of the experiment. A particular reason to doubt this is the fact that the comparisons designed to test for the converging of group members' assessments upon the central tendency of the group, carried out item-for-item, provided no indication that members' assessments converged upon each other less frequently with the last item of evidence than with the first. Since a shift toward the mean or median of the group thus appeared to occur throughout the presentation of evidence, it would seem likely that a risky or cautious shift, if it is a major effect, also occurs more or less continually.

A possible interpretation of the relative lack of a group-induced cautious or risky shift here is the occurrence of what has been termed "fall-back" behaviour. The "fall-Back" hypothesis which this implies concerns behaviour occurring when the following conditions are all met: (1) the subject, in evaluating evidence concerning the guilt or innocence of a defendant, estimates the probability that the defendant is guilty to be greater than 50%; (2) the subject thus believes the defendant to be guilty; (3) the subject is forced to make a decision of "Guilty" or "Innocent"; (4) the subject's estimate of the probability of the defendant's guilt is not sufficiently high for a decision of "Guilty"; (5) the subject therefore

makes a decision of "Innocent". According to the "fall-back" hypothesis, the subject's decision here is made without commitment and with a low level of confidence, the decision representing in a sense no decision at all. The lack of commitment, the low level of confidence and the impulse to avoid decision can be viewed as obliterating a tendency which might otherwise be found for a risky or a cautious shift to occur.

"Fall-back" behaviour could be seen to possibly undermine the the basis for the validity of many or all of the theories which predict a risky or a cautious shift. If a decision is made without commitment and is viewed as in a sense no decision at all, then a high value can scarcely be associated with it, as the multiple value theory would require. Similarly, as concerns the diffusion of responsibility theory, there is little responsibility to diffuse if the decision maker is forced to make a decision and has little commitment to it. In a similar way, "fall-back" behaviour would mean a lack of the commitment upon which the commitment theory is based. In much the same way, a leader could scarcely, as release theory would predict, release group members from social constraints they had assumed to exist if the decision in question is one to which the individual would feel no commitment but sees himself forced to take.

The type of behaviour which "fall-back" behaviour represents appears to have been largely ignored in the decision-making literature. Situations in which the decision criterion is high and where one can be forced to make a decision would seem particularly prone to the occurrence of "fall-back" behaviour. The judicial context would seem particularly conducive to the "fall-back" since the giving of "Innocent" decisions when one nevertheless believes the defendant to be guilty is fully legitimized; it is simply said in such a case that one failed to believe the defendant guilty beyond a reasonable doubt. The high criterion for the decision of "Guilty" employed in a judicial context would seem particularly

conducive to the occurrence of "fall-back" behaviour there; this in a sense favours the making of a decision of "Innocent". "Fall-back" behaviour could be expected to occur in other non-judicial decision making context as well. Further research seems needed here.

It should be emphasized that a "fall-back" decision is not the same as a conservative decision. One may have high confidence that a conservative decision is the right one, whereas low confidence is characteristic for a "fall-back" decision.

In addition to the level of confidence shown in the specific decision, a number of other aspects of confidence were of interest. Support was obtained for the assumption that confidence is lowest at the decision criterion point and tends to rise as the subjective probability estimate moves upwards or downwards from that. The results in question serve to establish the validity of both the confidence level and the subjective probability estimates which subjects made, since if the measures obtained had not been at all valid or psychologically meaningful, one would not expect the clear support which the assumption above received.

Another aspect of confidence here was that there was no sign of a tendency for confidence to increase on the basis of number of items alone. Related to this was the lack of any indication that subjects, after making a decision, show a decreasing readiness to change the decision as additional items of evidence collect. The "fall-back" hypothesis would serve to partially explain both these findings, which partly contradict findings obtained in various other contexts. The ambiguous and changing nature of judicial evidence, and the fact that maintaining openness to new evidence is an ideal of the judicial system (an ideal with which the subjects in the experiment were presumably conversant), would also serve to explain these findings.

As regards the effect of perceived influence in the group, the picture of the perceived leader which emerges is one of the leader giving fewer "Guilty" decisions than the followers, and also

showing less variation in his decisions, subjective probability estimates and confidence scores from one piece of evidence to another. This finding provides no support for release theory, which would have predicted just the opposite. Apparently, in a judicial context the leader is a kind of "steady pole" in the group, pulling the group "down to earth" and serving to restrain other members from a tendency to vacillate. Apparently, the leader tends to possess a somewhat higher decision criterion than the followers. This is seen to provide an additional basis for winning the recognition of the other members, since employing a high decision criterion for judicial decisions is commonly seen as a socially acceptable ideal.

Concerning relations with age, older Ss were found to give higher S.P. estimates than younger Ss did, the result being significant in the comparison of upper and lower age quartiles only. Since older Ss did not give a greater number of "Guilty" decisions than younger Ss, it was reasoned that their decision criteria were also higher. Their tendency to give higher S.P. estimates was seen as possibly representing a tendency to give more extreme S.P. estimates than younger Ss, this conceivably reflecting their greater experience.

As regards sex differences, results of the two versions of the experiment were contradictory, female Ss giving higher S.P. estimates than males in one version and lower estimates than males in the other. These results, although not interpretable as indicating consistent sex-linked differences, can be seen to highlight the interaction with the specific task content which the occurrence of sex differences often shows.

In the case of education level it was found, as predicted by the relevant arguments theory, that those of higher education level displayed greater and more frequent item-to-item change in their S.P. and C.L. scores. An alternative, though not necessarily

opposing interpretation given these results was that those of higher education level reflect in this behaviour a greater degree of differentiation. This latter interpretation received some support through the finding that subjects of lower education level were more dogmatic, since dogmatic persons are claimed by Rokeach (1960) to be less differentiated in their belief systems.

Results for rigidity provided no support for the hypothesis that rigid subjects would show a lesser degree or frequency of item-to-item change in assessments, or less shift, than non-rigids. For one of the two versions of the experiment, rigid subjects were found to show higher S.P. estimates. However, the interpretation of this result appears problematical and cross-validation is needed. Also, results for dogmatism gave no clear picture. Dogmatic subjects showed lower S.P. estimates than non-dogmatics on one of the versions but, in apparent contrast to this, displayed a higher frequency of "Guilty" decisions than the non-dogmatics on the other version. One can cautiously conclude that the effects of both dogmatism and rigidity upon the evaluation of judicial type evidence depends in strong measure upon the evidence involved.

The findings for extremity relate to each of the different personality and demographic variables. A result which had not at all been hypothesized was that dogmatics, under certain conditions, showed less extreme S.P. estimates. Although this seemed in some ways to contradict Rokeach's (1960) description of the characteristics which dogmatics possess, a careful analysis of these characteristics and of certain characteristics of the judicial system suggested a rationale for interpreting this result. Basically, dogmatics were seen as identifying more strongly than the non-dogmatics with the plight of the defendant and the importance of the judicial system showing caution toward the defendant. On the other hand, this interpretation should be seen as speculative. The possibility of a chance result should not be ignored.

Limited support was obtained for the hypothesis that rigid subjects show more extreme S.P. estimates, as the literature would lead one to expect. The S.P. estimates of male subjects were also found in point to be more extreme. Probably no more should be said than that sex differences in extremity apparently do exist in the judicial type context; it cannot be concluded that the difference found is a general one.

Older subjects were also found to be more extreme in their S.P. estimates than younger. This finding supports the interpretation provided earlier for the age differences found in S.P. estimates. Regarding education level, on the other hand, significant differences in both directions are found, those of higher education level showing more extreme S.P. estimates under one set of conditions and less extreme estimates under another. Thus, no consistent effect is found.

As regards relations of decision making behaviour with personality and demographic variables generally, specific aspects of the case material appear to play an important role. This makes predictions of how an individual judge will evaluate evidence, even if one takes account of the personality and demographic variables considered here, appear more than problematical. On the other hand, there is strong indication that these variables do play role in judges' evaluation of evidence. Consideration of this fact lends a certain degree of relativity to the decisions made by the individual judge or jury member.

SUMMARY

Decision making behaviour and group-induced judgmental and choice shift were studied in a judicial type context. Subjects were 93 evening course students, 18 to 51 years of age, of two different education levels. Groups of 3 subjects each were formed, those in a group being of the same sex and education level. Material from two different criminal court cases, each divided up into six pieces of evidence, was presented. For each piece of evidence, the subjects, whether acting individually or as a

group, were to estimate the probability that the defendant was guilty (S.P. estimate), decide whether the defendant should be called "Guilty", and assess their level of confidence in this decision (C.L. estimate). For the case considered initially, subjects were to make their estimates and decision first individually (I_1 condition), then as a group (group discussion to consensus, G condition) and finally individually again (I_2 condition). Subjects evaluated the second case under individual conditions only (I_3 condition). To study the effect of varying the decision material, two different versions of the experiment were employed, approximately half of the subjects receiving the one version (1) and half the other (2). In Version 1 subjects received the one case (A) first and the other (B) second; in Version 2 the order was reversed. Group members were to rank each other and themselves in terms of influence in the group. Rigidity (R1OR) and dogmatism (R1OD) were also measured. The relation of the two personality variables and of the demographic variables age, sex and education level to the decision making behaviour were studied.

Considering a shift to a higher S.P. estimate or to a "Guilty" decision as risky was suggested. No generalized risky or cautious shift was found but there were signs of either a risky shift or a cautious one under certain conditions. Intra-group convergence of S.P. and C.L. scores and of decisions was shown. "Fall-back" behaviour (giving of "Innocent" decisions with low confidence and lack of commitment when S.P. is above .50 but below the decision criterion) was seen to invalidate conventional theories here predicting a risky or cautious shift. Confidence appeared to increase the farther upwards or downwards the S.P. estimate moved from the criterion point. No sign of a successive commitment to decisions made or of an increase in C.L. with an increase in amount of evidence alone was found. Leaders (those ranked higher in intra-group influence) were shown to give fewer "Guilty" decisions and to vary less in their S.P. and C.L. estimates from one item of evidence to the next than followers. The leader's decision criterion appeared to be higher and his role to be that of a "steady pole" in the group. Older subjects gave higher and more extreme S.P. estimates but seemed to also employ higher decision criteria. Contradictory results concerning sex differences in

S.P. estimates were obtained, depending upon the material. Those of higher education level displayed greater item-to-item change in S.P. and C.L. scores, suggesting greater cognitive differentiation. Relations of rigidity and dogmatism to S.P. estimates were contradictory, depending upon the material. Whereas rigids showed greater extremity of S.P. estimates, dogmatics showed less. An interpretation of the later result in terms of the peculiarities of the judicial decision making task was suggested. The complexity of the concept of risk in a judicial context was discussed, as was the interaction with situational factors evident in the effect of personality and demographic variables upon decision making behaviour here.

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APPENDIXES

Appendix A

Case A, a car theft, consisted of the following statements:

1. A person is accused of having stolen a car.
2. The person had been accused of the same crime three years earlier.
3. A cigarette-lighter with the accused's initials was found in the stolen car.
4. A witness reports that he saw a car, which was apparently the stolen one, being driven by a drunken person.
5. The accused was at a party with some friends one kilometer from the place from which the car was reported to be stolen.
6. A waiter in a restaurant says that the accused, the day before the car-theft, came in and wondered if somebody had found his lost cigarette-lighter in the restaurant.

Appendix B

Case B, a burglary of stereo equipment, consisted of the following statements:

1. Stereo equipment was stolen and taken out through the window of a house. A person is accused of having committed the crime.
2. The police take fingerprints and find that these are identical with the accused's fingerprints which were found in the police files.
3. While searching the accused's possessions the police find stereo-equipment of the same brand as the stolen one. On being questioned where he had got the equipment, the accused answered that he bought it from a friend.
4. The accused presents an alibi for his fingerprints on the window, saying they could have come there while he polished the window, since he is employed as a window-cleaner. At the window-cleaning firm where the accused is employed it cannot be confirmed for sure that the accused was the person that the firm sent to clean the windows in the building in question.
5. The person who was robbed believes that the theft must have been carried out sometime between 5 and 9pm. The accused argues that on that evening he stayed with a friend without leaving the friend's flat at any time.
6. The friend confirms that the accused had been at home with him at least a part of the period in question but he admits that the accused could have left the flat for a time since he himself was out for a while.

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Title and subtitle GROUP INDUCED SHIFT, EXTREMITY OF JUDGMENT AND PERCEIVED INFLUENCE IN A JUDICIAL CONTEXT: RELATIONSHIP TO AGE, SEX, EDUCATION LEVEL RIGIDITY AND DOGMATISM.		
Abstract An experimental study investigating the decision making behaviour of individuals and groups in a situation as analogous a judicial decision making, as well as the relation of this behaviour to age, sex, education level, rigidity and dogmatism. 93 Ss, acting individually or as a group of male or female triad, were presented with two court cases. No generalized risky or cautious shift was evident. Intra-group convergence of subjective probability (S.P.) and confidence level (C.L.) was found. "Fall-back" behaviour (giving of "Innocent" decisions with low C.L. and lack of commitment when S.P. is above .50 but below the criterion) was hypothesized and seen to invalidate conventional theories here predicting risky or cautious shift. Leaders (those ranked higher in intra-group influence) were shown to give fewer "Guilty" decisions and vary less in their S.P. and C.L. estimates than followers. Older Ss gave higher and more extreme S.P. but seemed to also employ higher decision criteria. Contradictory results concerning sex differences in S.P. estimates were obtained, depending upon the material. Those of higher education level displayed greater item-to-item change in S.P. and C.L. scores, suggesting greater cognitive differentiation. Rigid Ss showed higher S.P. estimates than non-rigid, dogmatic Ss showed lower than non-dogmatic. The complexity of the concept of risk in a judicial context was discussed, as was the interaction with situational factors evident in the effect of personality and demographic variables upon decision making behaviour here.		
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av

Itzhak Pinhassi

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